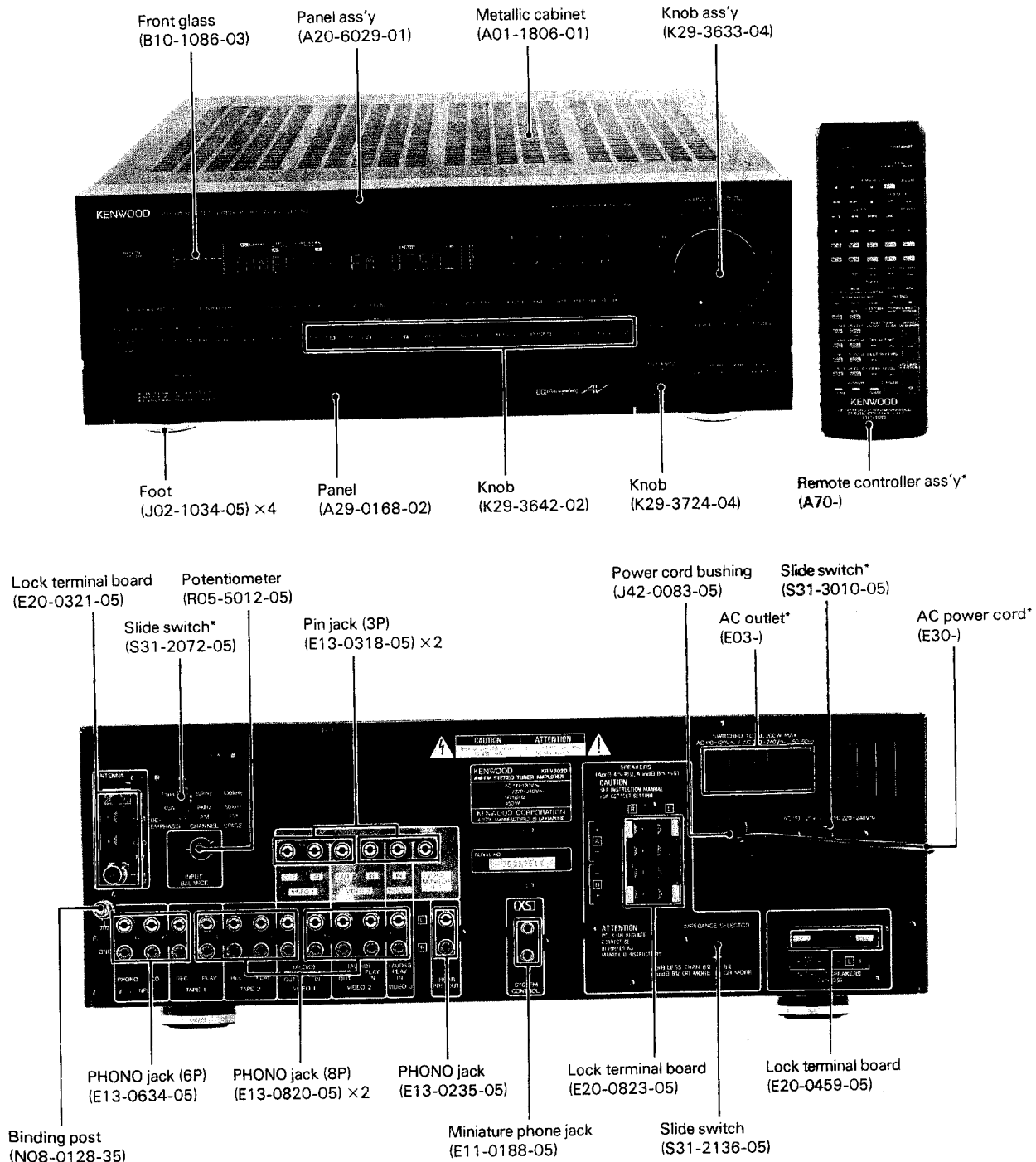


AUDIO / VIDEO STEREO RECEIVER
KR-V8020
 SERVICE MANUAL

KENWOOD

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 B51-4135-00(S)2393



* Refer to parts list on page 63.

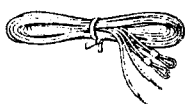
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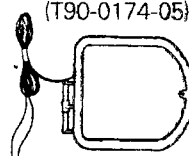
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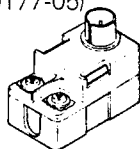
FM indoor antenna 1 (T90-0121-05)



AM loop antenna 1 (T90-0174-05)



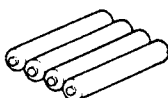
75 ohm/300 ohm antenna adaptor 1 (T90-0177-05)



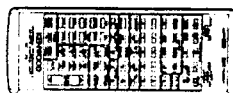
Loop antenna holder 1 (J19-0506-05)



Batteries ("RO3" or "AAA") 4



Remote control unit 1 (A70-0338-05: E) (A70-0342-05: K, P, Y)

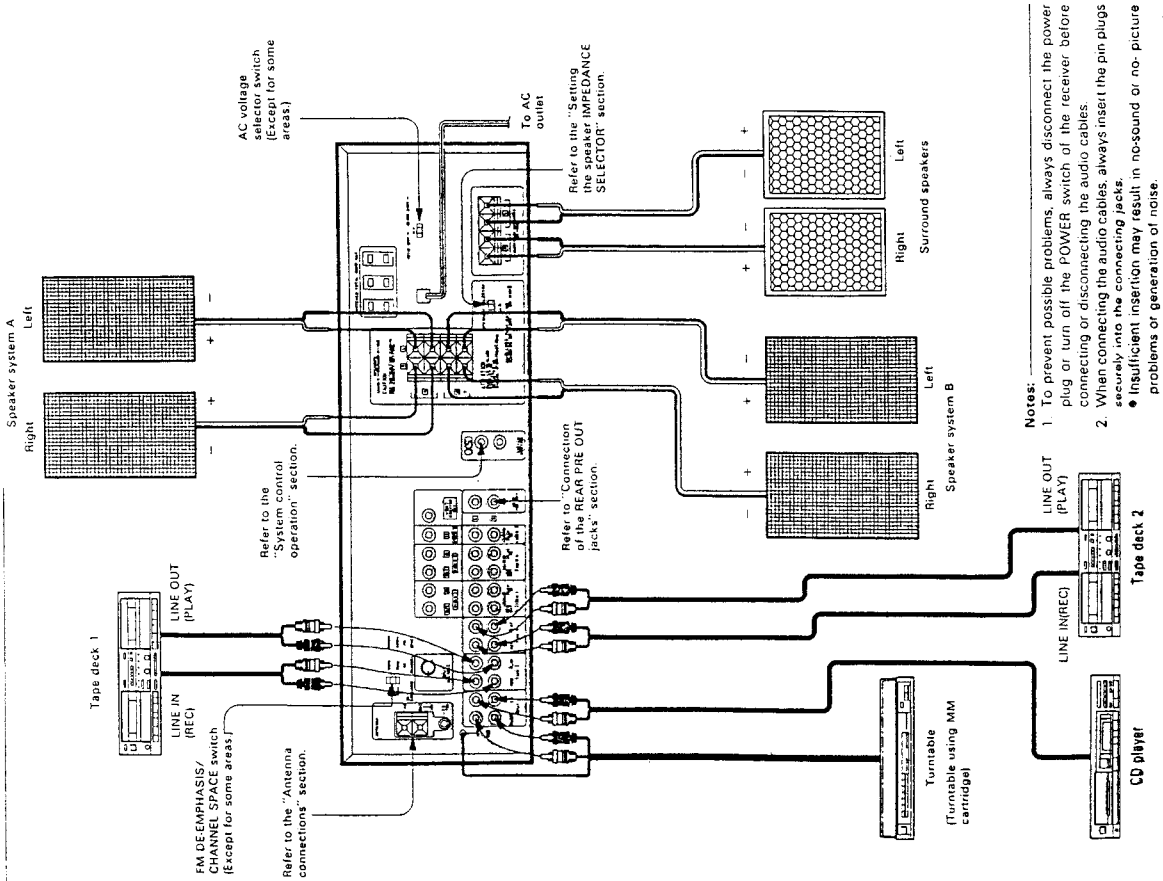


SYSTEM CONNECTIONS/REMOTE CONTROL OPERATION

System connections

Make connections as shown in the diagram below. When connecting the related system components, refer also to the instruction manuals of the related components. Do not plug in the power lead until all connections are complete.

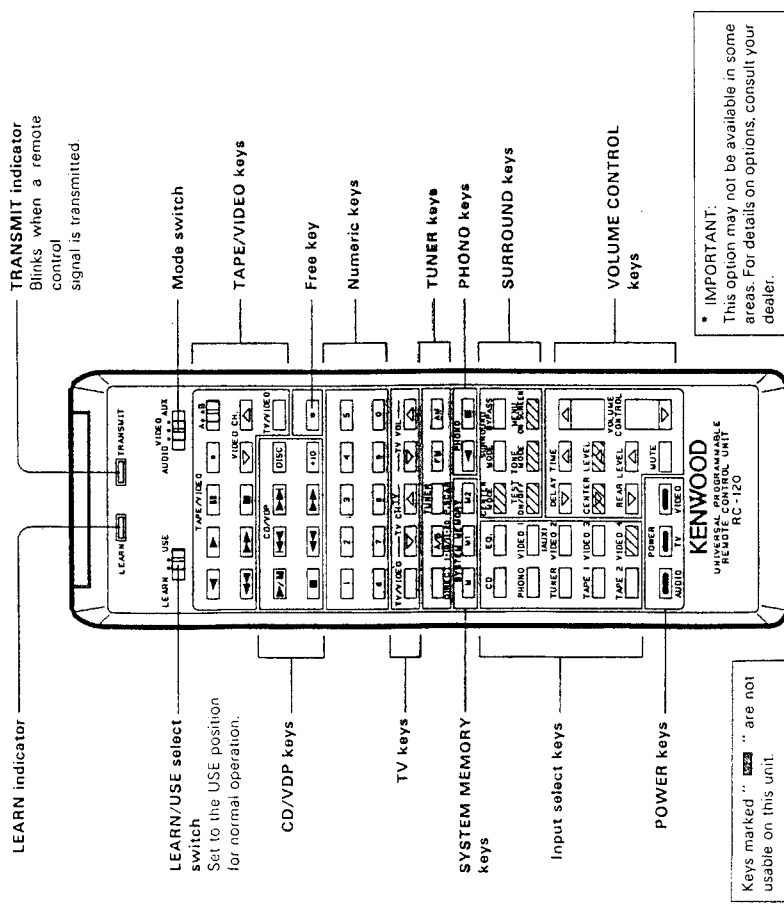
Connection of audio components



Remote control operation

The remote control unit (RC-120) is capable of the remote control of this unit as well as other KENWOOD system components connected to this unit via system control cords. *KENWOOD VCR and *TV. In addition, it is also possible to program the remote-controllable functions of other A/V components in the memory of RC-120, making it a multi-purpose remote controller for the whole of your system.

Names and operation of controls



Remote control operation

1. The whole of the keys can be used in three ways (three sides) by selecting the mode switch position. The AUDIO and VIDEO sides contains the initial programming of KENWOOD-original remote-control codes. (Please refer to "Original functions of keys".)

- AUDIO position: For the remote control of KENWOOD system components and KENWOOD TV.
- VIDEO position: For the remote control of KENWOOD VCR, KENWOOD TV and part of KENWOOD system components.
- AUX position: All keys are available, that is, able to store the programming of other remote control functions.

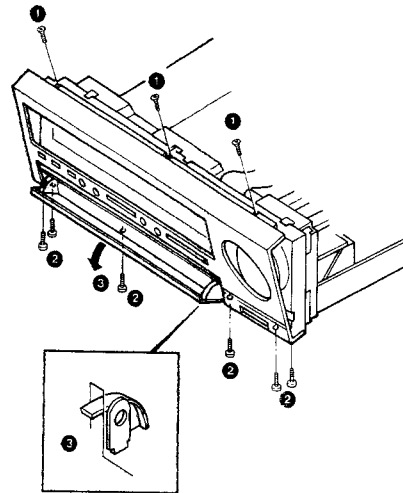
2. The remote control functions of other A/V components can also be programmed under the keys on the AUDIO and VIDEO sides as well as on the AUX side. However, when any information is programmed under a key on the AUDIO or VIDEO side, the original function pre-programmed under that key becomes unavailable.

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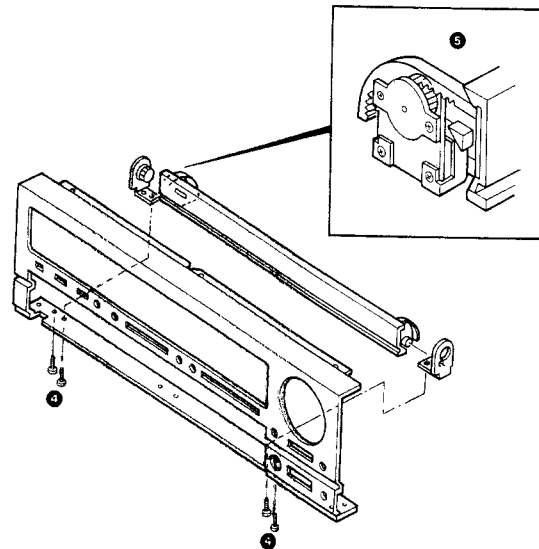
DISASSEMBLY FOR REPAIR

1. Removing the front panel ass'y

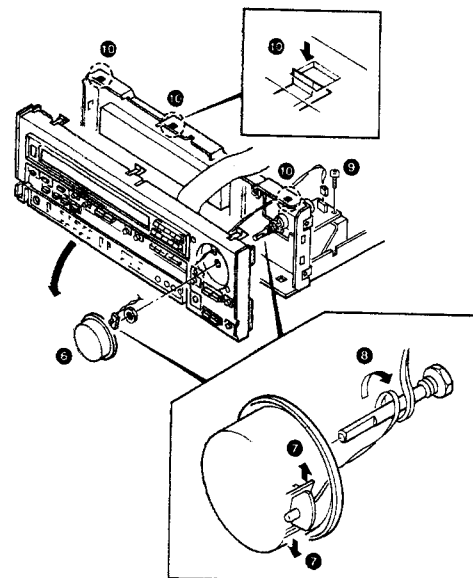
1. Remove the three screws in the upper side (①).
2. Remove the six screws in the lower side (②).
3. When removing, do not hit the damper (③).



4. Remove the four screws (④).
5. When installing, put gears into alignment as shown (⑤).



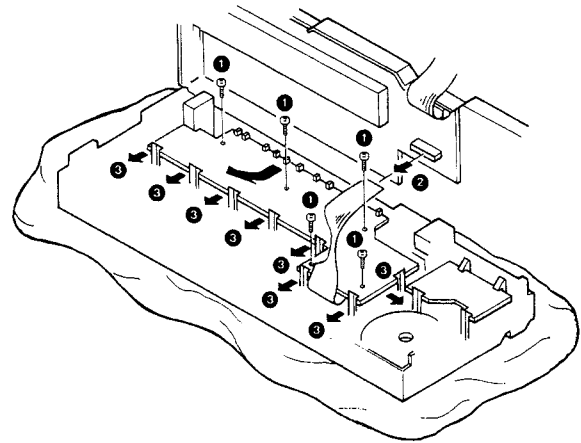
6. Detach the knob and its accompanying nut (⑥).
7. Disconnect the LED VOL. board (⑦).
8. When installing the knob, rotate the VOL. clockwise and set the cord as shown (⑧).
9. When disconnecting the (X14-) (D/6) board, remove the one screw and disconnect the connector (⑨).
10. Undo the three catches (⑩).



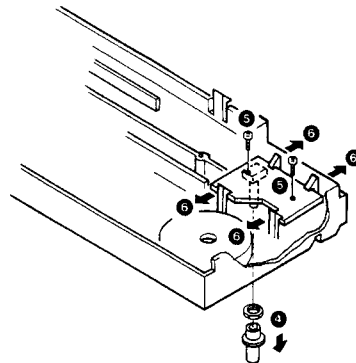
DISASSEMBLY FOR REPAIR

2. Removing the PC boards

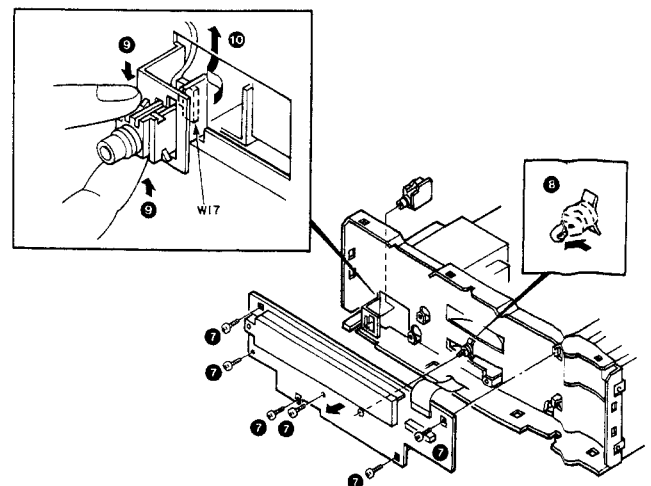
1. Remove the five screws (❶).
2. Disconnect the connector (❷).
3. Undo the eight catches (❸).



4. Detach the knob and its accompanying nut (❹).
5. Remove the two screws (❺).
6. Undo the four catches (❻).



7. Remove the six screws (❼).
8. Detach the unit holder (❽).
9. Push the upper and lower catches (❾), then disconnect cord W17 pulling it lightly in the direction of the arrow (❿).

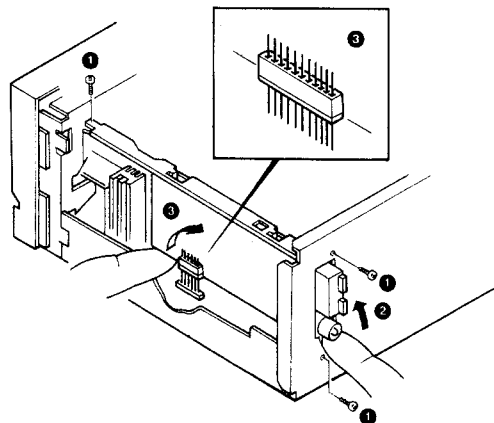


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DISASSEMBLY FOR REPAIR

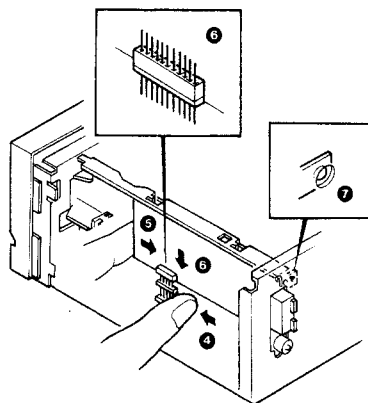
3. Removing the (X05-) (A/2) board

1. Remove the three screws (❶).
2. While pressing the ANT terminal (❷), disconnect the connector (❸).



4. Installing the (X05-) (A/2) board

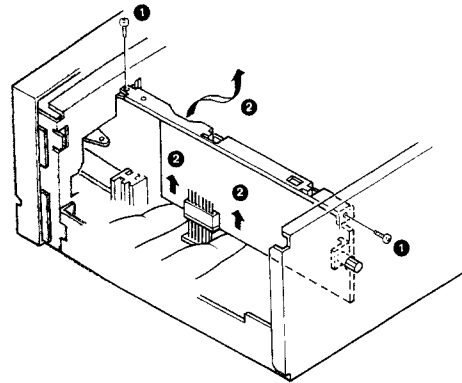
3. Place the board, and push the connector (❹).
4. Push the board (❺).
5. Put connector pins in alignment, then push the board from above (❻).
6. Set it to the recession (❼).



DISASSEMBLY FOR REPAIR

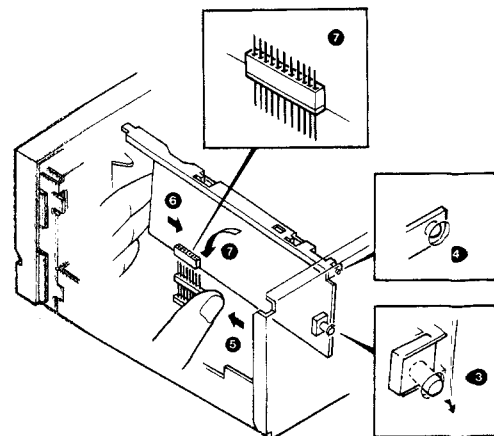
5. Removing the (X08-) (A/7) board

1. Remove the two screws (❶).
2. Disconnect the connector (❷).



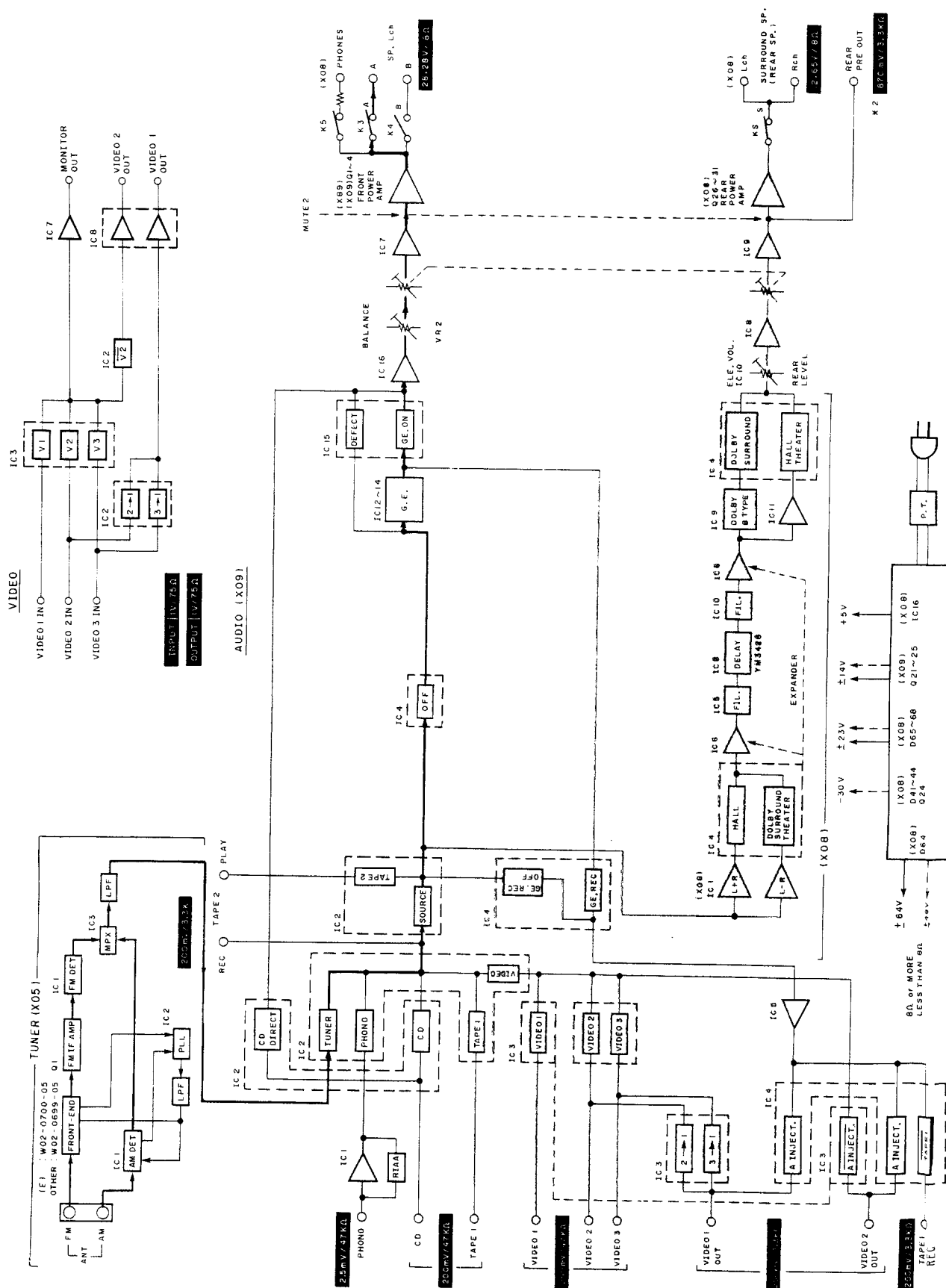
6. Installing the (X08-) (A/7) board

3. Insert the knob (❸).
4. Set it to the recession (❹).
5. Push the connector (❺).
6. Push the board (❻).
7. Put connector pins in alignment, then push the board from above (❼).



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BLOCK DIAGRAM



CIRCUIT DESCRIPTION

1. Description of components

1-1. TUNER UNIT (X05-353X-XX) 0-11 : K,P 0-82 : Y 2-72 : E

Ref. No.	Parts No.	Use/Function	Operation/Condition/Compatibility
Q1	2SC1923(R,O)	FM IF amplifier	
Q2	2SC945(A)(Q,P)	LPF (Low Pss Filter)	Compatible with 2SC1740S(Q,R).
Q3	2SC1845(F,E)	LPF (Low Pss Filter)	
Q4	2SC945(A)(Q,P)	Buffer amplifier	For the E version only. Compatible with 2SC1740S(Q,R).
Q5, 6	2SC945(A)(Q,P)	Emphasis select	75 μ s when ON, 50 μ s when OFF. For the U, UE version only. Compatible with 2SC1740S(Q,R).
Q7, 8	2SA733(A)(Q,P)	+B power supply select	Q7 : FM +B (ON in FM mode), Q8 : AM +B (ON in AM mode). Compatible with 2SA933S(Q,R).
IC1	LA1265	FM IF/AM detection	
IC2	LM7001	PLL (Phase Locked Loop)	
IC3	AN7470	MPX (Multiplexer)	

1-2. PRE AMPLIFIER UNIT (X08-230X-XX) 0-11 : K 1-02 : P 0-82 : Y 2-71 : E

Ref. No.	Parts No.	Use/Function	Operation/Condition/Compatibility
Q6 ~ 8	2SA999(E,F)	VIDEO 75 Ω buffer	
Q21	2SD1302(S,T)	Relay drive	For the power relay.
Q22	2SC945(A)(Q,P)	CE control	Compatible with 2SC1740S(Q,R).
Q23	2SA733(A)(Q,P)	Filament ON/OFF	Compatible with 2SA933S(Q,R).
Q24	2SB722(Q,P)	Constant voltage circuit	For the -30V power supply.
Q25	2SA922(F,E)	Impedance detector	4 Ω /8 Ω detect.
Q26, 27	2SA922(F,E)	Referential amplifier	
Q28	2SC1845(F,E)	Pre drive	
Q29	2SC4137	Bias compensation	
Q30	2SD1893	Final transistor	
Q31	2SB1253	Final transistor	
Q32	2SC1845(F,E)	Current limiter	
Q33	2SA733(A)(Q,P)	Protection	Signal. Compatible with 2SA933S(Q,R).
Q34	2SC945(A)(Q,P)	Relay drive	Surround SP. Compatible with 2SC1740S(Q,R).
Q35	2SC945(A)(Q,P)	Relay drive	Speaker A. Compatible with 2SC1740S(Q,R).
Q36	2SC945(A)(Q,P)	Relay drive	Speaker B. Compatible with 2SC1740S(Q,R).
Q37	2SC945(A)(Q,P)	Relay drive	Phones. Compatible with 2SC1740S(Q,R).
IC1	NJM2058D	Buffer amplifier	
IC4	TC9162N	Analog switch array	
IC5	NJM4565L	LPF	7kHz low pass filter.
IC6	μ PC1571C	Analog compounder	
IC8	YM3428	Digital delay	
IC9	LA2730	Dolby B type NR IC	
IC10	NJM072BL	LPF	7kHz low pass filter.
IC11	NJM4565L	Buffer amplifier	For the output.
IC13~15	NJM2246L	VIDEO selector	This selector have a 6dB amplifier.
IC16	μ PC7805HF	Constant voltage circuit	For the +5V power supply.

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CIRCUIT DESCRIPTION

1-3. AUDIO UNIT (X09-293X-XX) 0-11 : K,Y 1-02 : P 2-71 : E

Ref. No.	Parts No.	Use/Function	Operation/Condition/Compatibility
Q1, 2	2SC2922*5	Main amplifier final stage	
Q3, 4	2SA1216*5	Main amplifier final stage	
Q5, 6	2SC4137	Bias compensation	
Q7, 8	2SC2878(B)	Muting	
Q9, 10	2SC2878(B)	Muting	For the main input.
Q11, 13	2SC2878(B)	Muting	For the rear input.
Q12, 14	2SC2878(B)	Muting	For the center input.
Q21	2SD1266	Constant voltage circuit	For the +15V power supply.
Q22	2SC945(A)(Q,P)	Constant voltage circuit	For the +15V power supply. Compatible with 2SC1740S(Q,R).
Q23, 24	2SD1266	Constant voltage circuit	For the -15V power supply.
Q25	2SA733(A)(Q,P)	Constant voltage circuit	For the -15V power supply. Compatible with 2SA933S(Q,R).
Q26	2SC945(A)(Q,P)	Constant voltage circuit	For the +15V power supply. Compatible with 2SC1740S(Q,R).
Q27	2SA733(A)(Q,P)	Constant voltage circuit	For the -15V power supply. Compatible with 2SA933S(Q,R).
Q28	2SD1266	Constant voltage circuit	For the motor VR +12V power supply.
Q29	2SC2003(L,K)	Ripple filter	For the tuner +5V.
Q30	2SA733(A)(Q,P)	Muting control	High mute. Compatible with 2SA933S(Q,R).
Q32	2SA733(A)(Q,P)	Muting control	Low mute. Compatible with 2SA933S(Q,R).
Q34, 35	2SA945(A)(Q,P)	IC control	For the IC15. Compatible with 2SC1740S(Q,R).
Q36, 37	2SA733(A)(Q,P)	IC control	For the IC15. Compatible with 2SA933S(Q,R).
Q38	2SA733(A)(Q,P)	Muting control	Low mute. Compatible with 2SA933S(Q,R).
IC1	μPC4570C-A	Phono equalizer amplifier	
IC2	TC9164N	Input select	
IC3, 4	TC9163N	Input select	
IC5	NJM4558D	Buffer amplifier	For the REC OUT signal.
IC6, 7	μPC4570C-A	Buffer amplifier	
IC8, 9	NJM4558D	Buffer amplifier	
IC10	TC9176P	Electronic volume	Rear center volume.
IC11	NJM4558D	Buffer amplifier	For the electronic volume.
IC12	LC7522	Electronic volume array	For the GE (Graphic equalizer) volume.
IC13, 14	M5229P	OP amplifier	For the GE.
IC15	LC4966	Selector	GE ON/OFF.

CIRCUIT DESCRIPTION

1-4. DISPLAY UNIT (X14-270X-XX) 0-11 : K,P,Y 2-71 : E

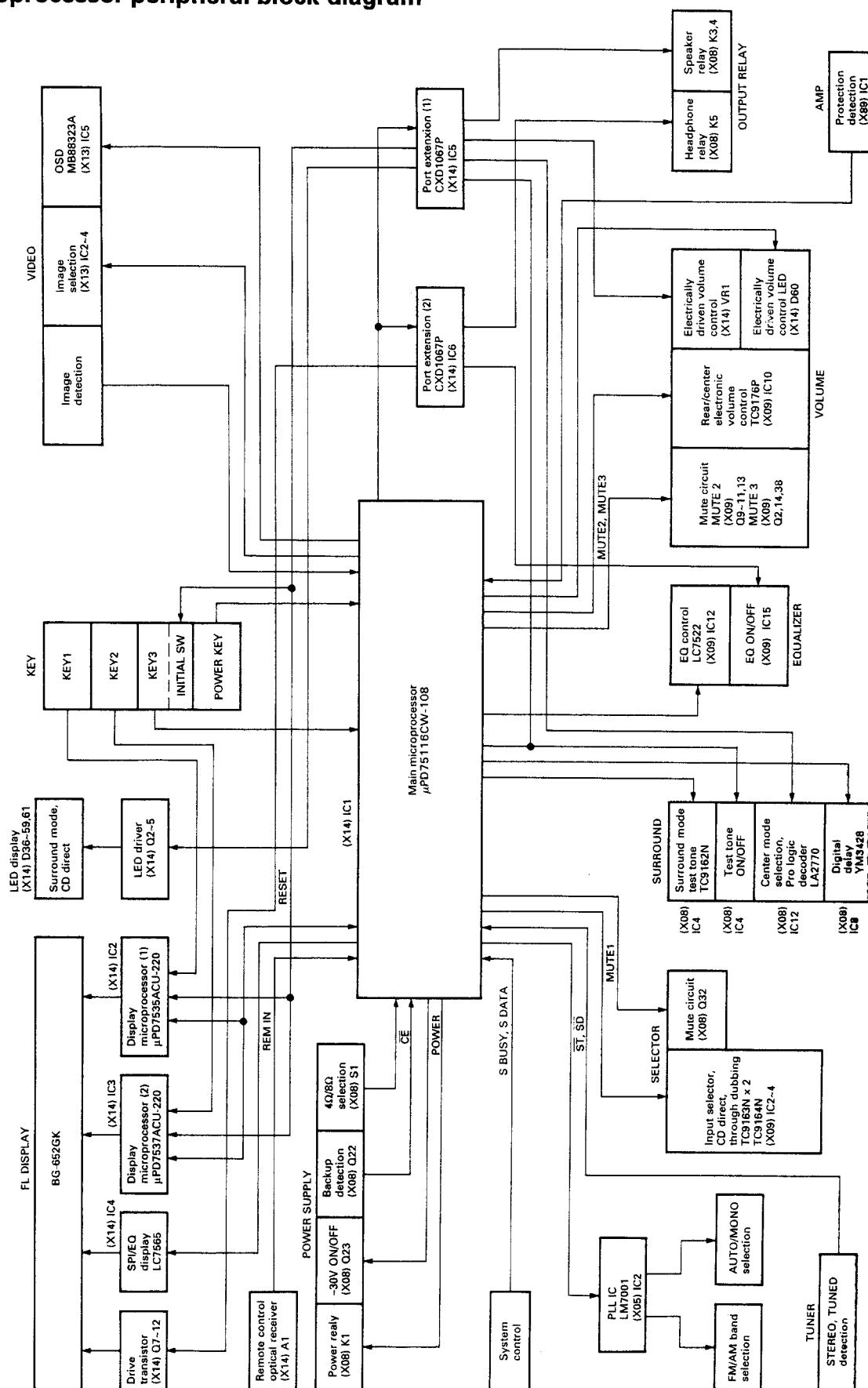
Ref. No.	Parts No.	Use/Function	Operation/Condition/Compatibility
Q1	2SC945(A)(Q,P)	Reset circuit	Compatible with 2SC1740S(Q,R).
Q2	2SC945(A)(Q,P)	LED driver circuit	Dolby pro logic. Compatible with 2SC1740S(Q,R).
Q3	2SC945(A)(Q,P)	LED driver circuit	Theater. Compatible with 2SC1740S(Q,R).
Q4	2SC945(A)(Q,P)	LED driver circuit	Hall. Compatible with 2SC1740S(Q,R).
Q5	2SC945(A)(Q,P)	LED driver circuit	CD direct. Compatible with 2SC1740S(Q,R).
Q6	2SC945(A)(Q,P)	LED driver circuit	Volume. Compatible with 2SC1740S(Q,R).
Q7	2SA733(A)(Q,P)	FIP driver	Equalizer "ON". Compatible with 2SA933S(Q,R).
Q8	2SA733(A)(Q,P)	FIP driver	Video monitor "4". Compatible with 2SA933S(Q,R).
Q9	2SA733(A)(Q,P)	FIP driver	Video monitor "3". Compatible with 2SA933S(Q,R).
Q10	2SA733(A)(Q,P)	FIP driver	"CENTER". Compatible with 2SA933S(Q,R).
Q11	2SA733(A)(Q,P)	FIP driver	"REAR". Compatible with 2SA933S(Q,R).
Q12	2SC945(A)(Q,P)	FIP driver	FIP grid current buffer. Compatible with 2SC1740S(Q,R).
Q13, 14	DTC124ES	FIP driver	FIP grid current buffer.
IC1	μ PD75116CW-108	Microprocessor	Main microprocessor.
IC2, 3	μ PD7537ACU-220	Microprocessor	Sub microprocessor, FIP driver and key loading.
IC4	LC7565	FIP driver	GE, spectrum analyzer and rear/center volume level display driver.
IC5, 6	CXD1067P	I/O port	FIP/LED/Relay driver. For the volume motor and pro logic IC control.
IC7	LB1641	Motor driver	

1-5. MAIN AMPLIFIER UNIT (X89-110X-XX) 0-11 : K,Y 1-02 : P 2-71 : E

Ref. No.	Parts No.	Use/Function	Operation/Condition/Compatibility
Q1~4	2SC1845(F,E)	1st stage voltage amp	
Q5~8	2SC945(A)(Q,P)	1st stage cascode amp	Compatible with 2SC1740S(Q,R).
Q9~12	2SC1845(F,E)	2nd stage voltage amp	
Q13~16	2SA1123(R,S)	3rd stage voltage amp	
Q17, 18	2SA1123(R,S)	3rd stage cascode amp	
Q19, 20	2SC2631(R,S)	3rd stage current mirror	
Q21, 22	2SC3944(Q,R)	Power amplifier driver	
Q23, 24	2SA1535(Q,R)	Power amplifier driver	
Q25, 26	2SC2631(R,S)	Protector, current detector	Positive (+) side.
Q27, 28	2SA992(F,E)	Protector, current detector	Negative (-) side.
Q29	2SA992(F,E)	Protector	Transmits the current detected signal to IC1.
IC1	μ PC1237HA	Protector	Relay drive.

CIRCUIT DESCRIPTION

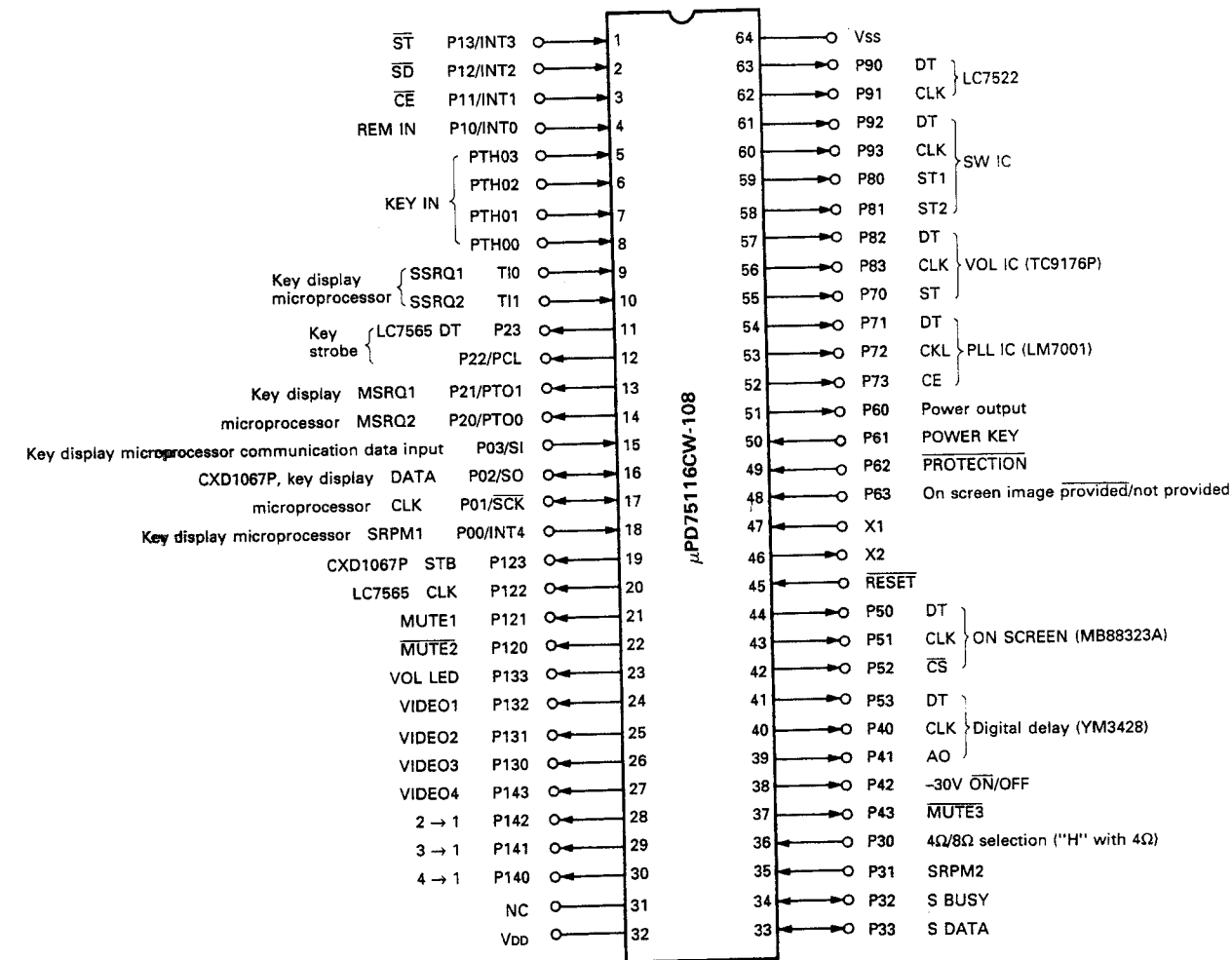
2. Microprocessor peripheral block diagram



CIRCUIT DESCRIPTION

3. Main microprocessor : μ PD75116CW-108 (X14- : IC1)

3-1. Terminal connection diagram



3-2. Key matrix

I	O	P22 (57)	P23 (56)	INISW1	INISW2
PTH03 (5)			CD DIRECT	SPI 0 : Not provided 1 : Provided	Upper limit of reception of AM 10kHz. 0 : 1610kHz 1 : 1700kHz
PTH02 (6)	REAR LEVEL DOWN		M-1	SURROUND TYPE 0 : DOLBY 1 : PRO LOGIC	JBAND 0 : Not provided 1 : Provided
PTH01 (7)	REAR LEVEL UP		M-2	Remote control selection 0 : Unified 1 : Learning	VIDEO INPUT 0 : System 3 1 : System 4
PTH00 (8)	MUTE		SYSTEM MEMORY	-	IBAND 0 : K 1 : E

Tact switch

Initial setting diode matrix

CIRCUIT DESCRIPTION

3-3. Explanation of terminals

Pin No.	Pin name	I/O	Symbol	Description
1	P13/INT3	I	ST	Stereo signal input pin. With the TUNER position. with the selector set at "TUNER", when this pin is "L", "STEREO" is displayed.
2	P12/INT2	I	SD	Broadcast station existence/nonexistence detection signal input pin, which is used for auto tuning or programmed scan. At "L", "TUNED" is displayed. "H" : With station, "L" : Without station.
3	P11/INT1	I	CE	Backup detection pin. At "L", the backup mode is engaged to stop the clock.
4	P10/INT0	I	REM IN	Pin to input the signal resultant from detecting the remote control signal. Normally or when reading leader codes, the level is detected. When reading data codes, an interrupt is applied at its fall for detection.
5~8	PTH03~PTH00	I	KEY IN	Microprocessor key matrix signal input pins. Normally "L" (Threshold voltage > $V_{DD} \times 7.5/16$) (Exchange time = 32.3 μ s)
9	TI0	I	SSRQ1	Pin to input the communication request signal from display microprocessor (1). Normally "L", and "H" with communication request (when a pertinent key of display microprocessor (1) is pressed.)
10	TI1	I	SSRQ2	Pin to input the communication request signal from display microprocessor (2). Normally "L", and "H" with communication request (when a pertinent key of display microprocessor (2) is pressed.)
11	P23	O (CMOS)	LC7565 DT Key strobe	Pin to output the DT signal to graphic equalizer IC LC7565. Main microprocessor key matrix strobe signal pin. Normally "L", and "H" when key is taken in.
12	P22/PCL	O (CMOS)	Key strobe	Main microprocessor key matrix strobe signal pin. Normally "L", and "H" when key is taken in.
13	P21/PTO1	O (CMOS)	MSRQ1	Pin to output the communication request signal from the main microprocessor to display microprocessor (1). Normally "L", and "H" with communication request (per 8 bits.) During power ON, pulse is output to transfer display data at all times. (Refer to the communication format for between master and slave.)
14	P20/PTO0	O (CMOS)	MSRQ2	Pin to output the communication request signal from the main microprocessor to display microprocessor (2). Same as MSRQ1 for the rest.
15	P03/SI	I		Display microprocessor (1), (2) communication data input pin, to which the status data of the key matrix of each display microprocessor is input.
16	P02/SO	I/O		Data output pin of port extension IC CXD1067P and display microprocessors (1) and (2).
17	P01/SCK	I/O		Clock output pin of port extension IC CXD1067P and display microprocessors (1) and (2). Normally "H". During power ON, pulse is output to transfer display data at all times.
18	P00/INT4	I	SRPM1	Pin to input the communication acknowledge signal from display microprocessor (1).
19	P123	O (N-ch open drain)	CXD1067P STB	Port extension IC CXD1067P latch signal output pin. Normally "L", and latch at "H".
20	P122	O (N-ch open drain)	LC7565 CLK	Pin to output the clock signal to graphic equalizer display IC LC7565. Normally "L".
21	P121	O (N-ch open drain)	MUTE1	Pin to output a muting signal in input selection or during tuner scanning, etc. Normally "L", and active "H".
22	P120	O (N-ch open drain)	MUTE2	Pin to output a muting signal for audio muting or for such a selection as TAPE2 ON/OFF, EQ ON/OFF, EQ REC ON/OFF, etc. Normally "L", and active "H".
23	P133	O (N-ch open drain)	VOL LED	Electrically driven volume control point indicator. Normally "H" (LED lights ON.) LED lights ON 4sec at power ON and flickers in ON/OFF interval of 500msec during muting. LED flickers in ON/OFF intervals of 64msec while volume is turned up or down by an electrically driven volume control from the remote control.

CIRCUIT DESCRIPTION

Pin No.	Pin name	I/O	Symbol	Description																																																																																																																																																																																																																																					
24~26	P132~P130	O (N-ch open drain)	VIDEO1~VIDEO3	Pins to control the video monitor and the video REC output of VIDEO1/ VIDEO2. Through dubbing is also involved.																																																																																																																																																																																																																																					
27	P143		VIDEO4																																																																																																																																																																																																																																						
28	P142		2 → 1																																																																																																																																																																																																																																						
29	P141		3 → 1																																																																																																																																																																																																																																						
30	P140		4 → 1																																																																																																																																																																																																																																						
<table><tr><th colspan="3">Status</th><th colspan="7">Port status</th></tr><tr><th>Model</th><th>Video monitor</th><th>Through dubbing status</th><th>VIDEO1</th><th>VIDEO2</th><th>VIDEO3</th><th>VIDEO4</th><th>2 → 1</th><th>3 → 1</th><th>4 → 1</th></tr><tr><td rowspan="16">KR-V9020</td><td rowspan="4">VIDEO1</td><td>OFF</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>2 → 1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td><td>1</td></tr><tr><td>3 → 1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td></tr><tr><td>4 → 1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td rowspan="4">VIDEO2</td><td>OFF</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td><td>1</td></tr><tr><td>2 → 1</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td><td>1</td></tr><tr><td>3 → 1</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td></tr><tr><td>4 → 1</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td rowspan="4">VIDEO3</td><td>OFF</td><td>1</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td></tr><tr><td>2 → 1</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td></tr><tr><td>3 → 1</td><td>1</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td></tr><tr><td>4 → 1</td><td>1</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td rowspan="4">VIDEO4</td><td>OFF</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td></tr><tr><td>2 → 1</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td></tr><tr><td>3 → 1</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td></tr><tr><td>4 → 1</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td></tr><tr><td rowspan="12">KR-V8020</td><td rowspan="3">VIDEO1</td><td>OFF</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td></tr><tr><td>2 → 1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>3 → 1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td></tr><tr><td rowspan="3">VIDEO2</td><td>OFF</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td></tr><tr><td>2 → 1</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>3 → 1</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td></tr><tr><td rowspan="3">VIDEO3</td><td>OFF</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td></tr><tr><td>2 → 1</td><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>3 → 1</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td><td>0</td></tr></table>					Status			Port status							Model	Video monitor	Through dubbing status	VIDEO1	VIDEO2	VIDEO3	VIDEO4	2 → 1	3 → 1	4 → 1	KR-V9020	VIDEO1	OFF	0	1	1	1	1	1	1	2 → 1	0	1	1	1	0	1	1	3 → 1	0	1	1	1	1	0	1	4 → 1	0	1	1	1	1	1	0	VIDEO2	OFF	1	0	1	1	0	1	1	2 → 1	1	0	1	1	0	1	1	3 → 1	1	0	1	1	1	0	1	4 → 1	1	0	1	1	1	1	0	VIDEO3	OFF	1	1	0	1	1	0	1	2 → 1	1	1	0	1	0	1	1	3 → 1	1	1	0	1	1	0	1	4 → 1	1	1	0	1	1	1	0	VIDEO4	OFF	1	1	1	0	1	1	0	2 → 1	1	1	1	0	0	1	1	3 → 1	1	1	1	0	1	0	1	4 → 1	1	1	1	0	1	1	0	KR-V8020	VIDEO1	OFF	1	0	0	0	0	0	1	2 → 1	1	0	0	0	1	0	0	3 → 1	1	0	0	0	0	1	0	VIDEO2	OFF	0	1	0	0	0	0	1	2 → 1	0	1	0	0	1	0	0	3 → 1	0	1	0	0	0	1	0	VIDEO3	OFF	0	0	1	0	0	0	1	2 → 1	0	0	1	0	1	0	0	3 → 1	0	0	1	0	0	1	0
Status			Port status																																																																																																																																																																																																																																						
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KR-V9020	VIDEO1	OFF	0	1	1	1	1	1	1																																																																																																																																																																																																																																
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		4 → 1	1	1	0	1	1	1	0																																																																																																																																																																																																																																
	VIDEO4	OFF	1	1	1	0	1	1	0																																																																																																																																																																																																																																
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KR-V8020	VIDEO1	OFF	1	0	0	0	0	0	1																																																																																																																																																																																																																																
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		3 → 1	1	0	0	0	0	1	0																																																																																																																																																																																																																																
	VIDEO2	OFF	0	1	0	0	0	0	1																																																																																																																																																																																																																																
		2 → 1	0	1	0	0	1	0	0																																																																																																																																																																																																																																
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		2 → 1	0	0	1	0	1	0	0																																																																																																																																																																																																																																
		3 → 1	0	0	1	0	0	1	0																																																																																																																																																																																																																																
	31	NC																																																																																																																																																																																																																																							
	32	V _{DD}			Microprocessor power supply pin.																																																																																																																																																																																																																																				
	33	P33	I/O (CMOS)	SDATA	System serial communication DATA signal I/O pin. Normally, input mode is engaged. Only when serial data is output, output mode is engaged.																																																																																																																																																																																																																																				
34	P32	I/O (CMOS)	SBUSY	System serial communication BUSY signal I/O pin. Normally, input mode is engaged. Only when serial data is output, output mode is engaged.																																																																																																																																																																																																																																					
35	P31	I	SRPM2	Pin to input the communication acknowledge signal from display microprocessor (2).																																																																																																																																																																																																																																					
36	P30	I	4Ω/8Ω selection	Transformer tap selection switch input pin. "H" : 4Ω, "L" : 8Ω																																																																																																																																																																																																																																					
37	P43	O (CMOS)	MUTE3	CENTER REC OUT muting pin. Only for Normal or Wide mode of PRO LOGIC. Normally "L". Pulse is output in such a selection as TAPE2 ON/OFF, EQ ON/OFF, etc.																																																																																																																																																																																																																																					
38	P42	O (CMOS)	-30V ON/OFF	Pin to output the control signal to turn ON/OFF -30V of FL power to light the EQ/SPI display and other sections of the FL display concurrently. AN "H" signal is output about 500ms later after the power supply pin becomes "H".																																																																																																																																																																																																																																					
39	P41	O (CMOS)	YM3428 AO	Digital delay IC YM3428 control signal output pins.																																																																																																																																																																																																																																					
40	P40		YM3428 CLK																																																																																																																																																																																																																																						
41	P53		YM3428 DT																																																																																																																																																																																																																																						

CIRCUIT DESCRIPTION

Pin No.	Pin name	I/O	Symbol	Description
42	P52	O (CMOS)	MB88323A CS	OSD IC MB88323A control signal output pins.
43	P51		MB88323A CLK	
44	P50		MB88323A DT	
45	RESET			Microprocessor reset input pin. Normally "H".
46	X2	O		System clock oscillation pins (4.194MHz).
47	X1	I		
48	P63	I		OSD video signal existence/nonexistence detection input pin. "H" : Nonexistence, "L" : Existence. At "H" (nonexistence), the screen goes blue.
49	P62	I	PROTECTION	Pin to input the protection signal detection when speaker is shorted. During power ON, when this pin becomes "L", the speaker relay is turned off and "PROTECTION" is displayed. At this time, any other key than the power key is invalid.
50	P61	I	POWER KEY	Power key input pin. "H" with key ON.
51	P60	O (CMOS)	POWER	Power relay control output pin. "H" : Power ON, "L" : Power OFF.
52	P73	O (CMOS)	LM7001 CE	PLL IC LM7001 control signal output pins.
53	P72		LM7001 CLK	
54	P71		LM7001 DT	
55	P70	O (CMOS)	TC9176P ST	Electronic volume control IC TC9176P control signal output pins.
56	P83		TC9176P CLK	
57	P82		TC9176P DT	
58	P81	O (CMOS)	ST2	Function switch IC control signal output pins. One TC9162N, one TC9164N and two TC9163N's are controlled by these four pins. CLK and DT are common to each IC. ST1 is used for TC9162N, TC9163N's and TC9164N. ST2 is used for TC9163N (IC4).
59	P80		ST1	
60	P93		CLK	
61	P92		DT	
62	P91	O (CMOS)	LC7522 CLK	EQ IC LC7522 control signal output pins.
63	P90		LC7522 DT	
64	V _{SS}			GND pin.

3-4. Port extension IC : CXD1067P (X14- : IC5, 6)

• Pin assignment of IC5

Output pins	P1 (1)	P2 (2)	P3 (3)	P4 (4)	P5 (5)	P6 (6)
Description	Speaker A relay	Speaker B relay	Electrically driven volume control volume up	Electrically driven volume control volume down	INI SW1 display micro-processor reset	INI SW2
Output pins	P7 (7)	P8 (8)	P9 (9)	P10 (11)	P11 (12)	P12 (13)
Description	Rear speaker relay	TEST TONE ON/OFF	CENTER ON/OFF	NORMAL MODE	WIDE MODE	-

• Pin assignment of IC6

Output pins	P1 (1)	P2 (2)	P3 (3)	P4 (4)	P5 (5)	P6 (6)
Description	FL "V4" display	FL "V3" display	FL "ON" display	FL "CENTER" display	FL "REAR" display	Headphone reley
Output pins	P7 (7)	P8 (8)	P9 (9)	P10 (11)	P11 (12)	P12 (13)
Description	EQ OFF	EQ ON	DOLBY PRO LOGIC LED	THEATER LED	HALL LED	CD DIRECT LED

CIRCUIT DESCRIPTION

• Explanation of terminals (IC5)

Explanation of terminals (IC5)

Pin No.	Pin name	I/O	Symbol	Description																								
1	P1	O	SPA	Speaker relay A control pin. ON : "H", OFF : "L"																								
2	P2	O	SPB	Speaker relay B control pin. ON : "H", OFF : "L"																								
3	P3	O	VOL UP	Electrically driven volume control volume up signal. Active "H"																								
4	P4	O	VOL DOWN	Electrically driven volume control volume down signal. Active "H"																								
5	P5	O	INISW1	Initial setting switch take-in strobe signal. Display microprocessor reset signal (Temporarily "H" at power ON):																								
6	P6	O	INISW2	Initial setting switch take-in strobe signal.																								
7	P7	O	REAR SP	Rear speaker relay control signal. ON : "H", OFF : "L"																								
8	P8	O	TEST TONE ON/OFF	PRO LOGIC test tone ON/OFF control signal. ON : "L", OFF : "H"																								
9	P9	O	CENTER ON/OFF	Three pins P9~P11 make outputs as follows, according to the internal CENTER mode status of the microprocessor with power ON independent of a SURROUND mode or the status of the SURROUND bypass.																								
11	P10	O	NORMAL																									
12	P11	O	WIDE																									
				<table><tr><th>Pin</th><th>NORMAL</th><th>WIDE</th><th>CENTER OFF</th></tr><tr><td>CENTER mode</td><td></td><td></td><td></td></tr><tr><td>NORMAL</td><td>1</td><td>0</td><td>0</td></tr><tr><td>WIDE</td><td>0</td><td>1</td><td>0</td></tr><tr><td>PHANTOM</td><td>0</td><td>0</td><td>0</td></tr><tr><td>CENTER OFF</td><td>0</td><td>0</td><td>1</td></tr></table>	Pin	NORMAL	WIDE	CENTER OFF	CENTER mode				NORMAL	1	0	0	WIDE	0	1	0	PHANTOM	0	0	0	CENTER OFF	0	0	1
Pin	NORMAL	WIDE	CENTER OFF																									
CENTER mode																												
NORMAL	1	0	0																									
WIDE	0	1	0																									
PHANTOM	0	0	0																									
CENTER OFF	0	0	1																									
13	P12	O		Unused.																								

• Explanation of terminals (IC6)

Explanation of terminals (IC6)

Pin No.	Pin name	I/O	Symbol	Description															
1	P1	O	V4	FL static display control pin. "H" : Goes out, "L" : Lights on.															
2	P2	O	V3																
3	P3	O	ON																
4	P4	O	CENTER																
5	P5	O	REAR																
6	P6	O	HEADPHONE	Headphone relay control pin. ON : "H", OFF : "L"															
7	P7	O	EQ OFF	EQ ON/OFF control pin.															
8	P8	O	EQ ON																
				<table><tr><th>Pin</th><th>EQ OFF</th><th>EQ ON</th></tr><tr><td>Status</td><td></td><td></td></tr><tr><td>EQ OFF</td><td>1</td><td>0</td></tr><tr><td>EQ ON</td><td>0</td><td>1</td></tr><tr><td>CD DIRECT ON</td><td>0</td><td>0</td></tr></table>	Pin	EQ OFF	EQ ON	Status			EQ OFF	1	0	EQ ON	0	1	CD DIRECT ON	0	0
Pin	EQ OFF	EQ ON																	
Status																			
EQ OFF	1	0																	
EQ ON	0	1																	
CD DIRECT ON	0	0																	
9	P9	O	DOLBY PRO LOGIC	LED display pins. "H" : Lights on, "L" : Goes out															
11	P10	O	THEATER																
12	P11	O	HALL																
13	P12	O	CD DIRECT																

KR-V8020

CIRCUIT DESCRIPTION

3-5. Switch IC : TC9164N, TC9163N (X09- : IC2 ~ 3), TC9162N (X08- : IC4)

• Assignment

SW pins IC	S1	S2	S3	S4	S5	S6	S7	S8
TC9164N (ST1) (X09-) IC2	VIDEO	TUNER	TAPE1	PHONO	TAPE2	TAPE2	CD	CD DIRECT
TC9163N (ST1) (X09-) IC3	4 → 1	3 → 1	2 → 1	VIDEO4	VIDEO3	VIDEO2	VIDEO1	V2 AI
TC9163N (ST2) (X09-) IC4	HALL	PRO LOGIC	PRO LOGIC	TAPE1	V2 AI	V1 AI	EQ REC	EQ REC

• TC9162N control

Status		L							R						
		S1	S2	S3	S4	S5	S6	S7	S1	S2	S3	S4	S5	S6	S7
TEST TONE ON	L ch (L)	O	-	-	O	-	-	-	-	O	O	-	O	-	-
	C ch (L+R)	O	-	-	O	-	-	-	-	O	-	O	-	O	O
	R ch (R)	O	-	-	O	-	-	-	-	O	O	-	-	-	O
	S ch (L-R)	O	-	-	O	-	-	O	-	O	-	O	O	-	O
KR-V9010 SURROUND	PRO LOGIC	-	O	-	O	-	-	O	O	-	-	-	-	-	-
	THEATER	-	-	O	-	-	O	-	-	-	-	-	-	-	-
	HALL	-	-	O	-	O	-	-	-	-	-	-	-	-	-
KR-V8010 SURROUND	DOLBY	-	-	-	O	-	O	-	-	-	-	-	-	-	-
	THEATER	-	-	O	-	-	O	-	-	-	-	-	-	-	-
	HALL	-	-	O	-	O	-	-	-	-	-	-	-	-	-
SURROUND BYPASS		-	-	-	-	-	-	-	-	-	-	-	-	-	-

O : SW ON, - : SW OPEN

3-6. PLL IC : LM7001 (X05- : IC2) port assignment

	BO1 (2)	BO3 (9)
FM	1	O
AM	0	1
Other than tuner	0	0

	BO2 (8)
AUTO	0
MONO	1

0 : Short 1 : Open

3-7. GE VR : LC7522 (X09- : IC12) control

S pin (13) = VEE

f1 = 60Hz ... f7 = 15kHz

3-8. EQ/SPI display IC : LC7565 (X14- : IC4) control

S1 pin (15) = VSS

S2 pin (16) = VSS

f1 = 60Hz ... f7 = 15kHz

3-9. Electronic volume control

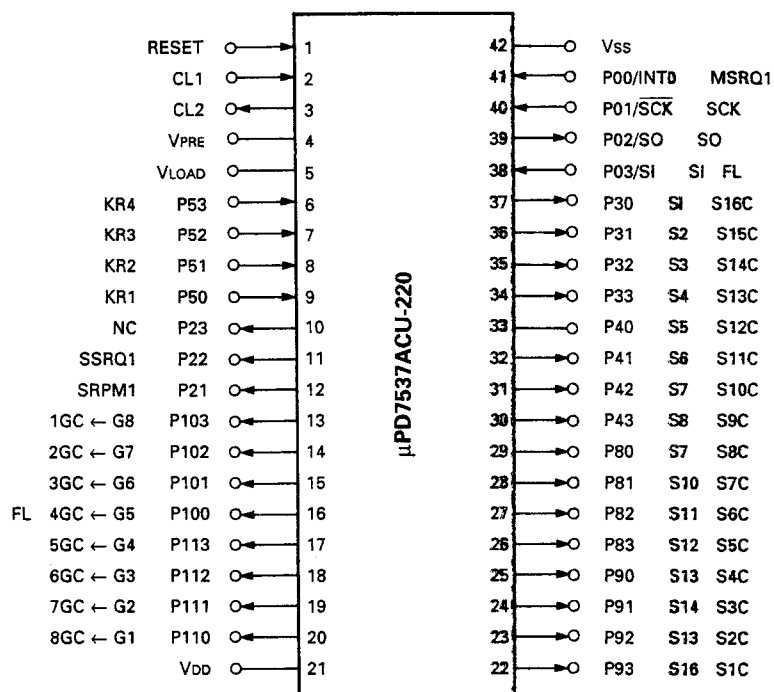
: TC9176P (X09- : IC10) control

R side : Rear volume

L side : Center volume

CIRCUIT DESCRIPTION

4-1. Terminal connection diagram



O	G1	G2	G3	G4	G5	G6	G7	G8
I	P110 (20)	P112 (19)	P112 (18)	P113 (17)	P100 (16)	P101 (15)	P102 (14)	P103 (13)
KR1 P50 (9)	EQ B	EQ C	EQ D	EQ f UP	EQ A	EQ DOWN	-	EQ f DOWN
KR2 P51 (8)	-	-	VIDEO4 (VIDEO3)	DOLBY PRO LOGIC (DOLBY)	HALL	SURROUND BYPASS	THEATER	SP A
KR3 P52 (7)	EQ MEMORY	SPI/EQ	EQ REC ON/OFF	EQ ON/DEFEAT	EQ UP	SP B	CHARACTER	DIRECT
KR4 P53 (6)	6	1	-	TUNING DOWN	AUTO/MANU.	TUNING UP	DIGIT	TUNER MEMORY

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CIRCUIT DESCRIPTION

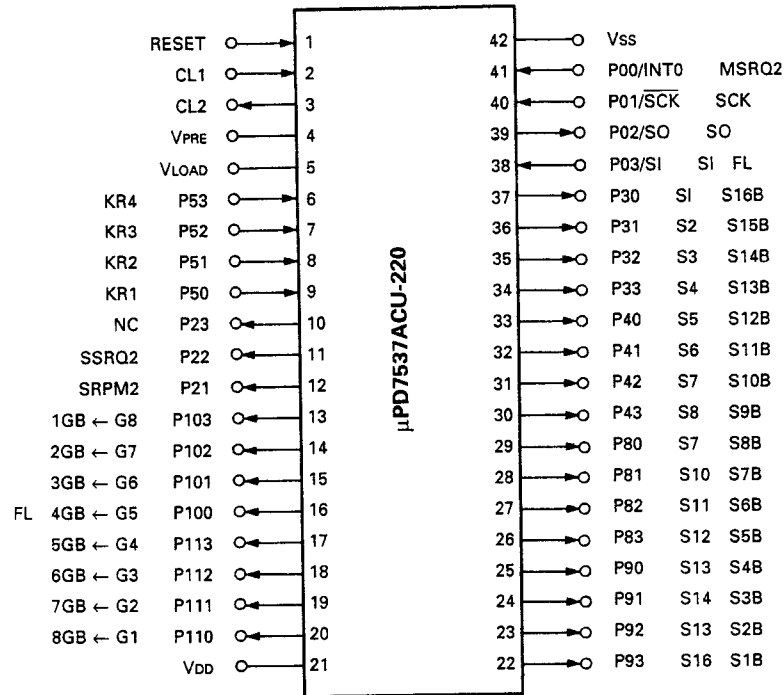
4-3. Explanation of terminals

Pin No.	Pin name	I/O	Symbol	Description
1	RESET	I		Display microprocessor reset pin. Reset is applied by the INISW1 of extension IC CXD1057P which is controlled by the main microprocessor.
2	CL1	I		Display microprocessor system clock oscillation pins (600kHz).
3	CL2	O		
4	VPRE			Display pin predriver power supply pin.
5	VLOAD			Display pin load power supply pin (-30V).
6~9	P53~P50	I	KR4~KR1	Key matrix return signal input pins.
10	P23	O	NC	Unused pin, which should be open.
11	P22	O	SSRQ1	Pin to output the communication request signal from the display microprocessor to the main microprocessor. Normally "L", and "H" with communication request (when a pertinent key of display microprocessor is pressed).
12	P21	O	SRPM1	Pin to input the communication acknowledge signal from the display microprocessor to the main microprocessor (per 8-bits).
13~16	P103~P100	O (P-ch open drain, mask option, built-in resistor)	G8~G5	FL grid control signal output pins (1GC~8GC of FL tube).
17~20	P113~P110		G4~G1	
21	VDD			Power supply pin (+5V).
22~25	P93~P90	O (P-ch open drain, mask option, built-in resistor)	S16~S13	FL segment control signal output pins (S1C~S16C of FL tube).
26~29	P83~P80		S12~S9	
30~33	P43~P40		S8~S5	
34~37	P33~P30		S4~S1	
38	P03/SI	I	SI	Pin to input the signal of communication with main microprocessor (display data input).
39	P02/SO	O	SO	Pin to output the signal of communication with main microprocessor (key data output).
40	P01/SCK	I	SCK	Pin to input the clock for communication with main microprocessor.
41	P00/INT0	I	MSRQ1	Pin to input the communication request signal from main microprocessor (per 8-bits).
42	VSS			GND pin.

CIRCUIT DESCRIPTION

5. Sub microprocessor (2) : μ PD7537ACU-220 (X14- : IC3)

5-1. Terminal connection diagram



5-2. Key matrix (KEY2)

O	G1 P110 (20)	G2 P111 (19)	G3 P112 (18)	G4 P113 (17)	G5 P100 (16)	G6 P101 (15)	G7 P102 (14)	G8 P103 (13)
KR1 P50 (9)	CD (CD DIRECT)	2 → 1	PHONO (CD)	TUNER (PHONO)	TPE1 (TUNER)	0/10	1-10/11-20	5
KR2 P51 (8)	DELAY TIME DOWN	3 → 1	VIDEO1 (TAPE2)	THROUGH DUBBING OFF	TAPE2 (TAPE1)	9	P.SCAN	4
KR3 P52 (7)	CENTER DOWN	4 → 1	VIDEO3 (VIDEO2)	AUDIO INJECTION	VIDEO2 (VIDEO1)	8	AM	3
KR4 P53 (6)	CENTER MODE	CENTER UP	PGM/SET	DELAY TIME UP	EQ E	7	FM	2

() for KR-V8020

CIRCUIT DESCRIPTION

5-3. Explanation of terminals

Pin No.	Pin name	I/O	Symbol	Description
1	RESET	I		Display microprocessor reset pin. Reset is applied by the INISW1 of extension IC CXD1057P which is controlled by the main microprocessor.
2	CL1	I		Display microprocessor system clock oscillation pins (600kHz).
3	CL2	O		
4	VPRE			
5	VLOAD			Display pin predriver power supply pin.
6~9	P53~P50	I	KR4~KR1	Display pin load power supply pin (~30V).
10	P23	O	NC	Key matrix return signal input pins.
11	P22	O	SSRQ2	Unused pin, which should be open.
12	P21	O	SRPM2	Pin to output the communication request signal from the display microprocessor to the main microprocessor. Normally "L", and "H" with communication request (when a pertinent key of display microprocessor is pressed).
13~16	P103~P100	O (P-ch open drain, mask option, built-in resistor)	G8~G5	Pin to input the communication acknowledge signal from the display microprocessor to the main microprocessor (per 8-bits).
17~20	P113~P110		G4~G1	
21	VDD			FL grid control signal output pins (1GB~8GB of FL tube).
22~25	P93~P90	O (P-ch open drain, mask option, built-in resistor)	S16~S13	Power supply pin (+5V).
26~29	P83~P80		S12~S9	
30~33	P43~P40		S8~S5	
34~37	P33~P30		S4~S1	
38	P03/SI	I	SI	FL segment control signal output pins (S1B~S16B of FL tube).
39	P02/SO	O	SO	Pin to input the signal of communication with main microprocessor (display data input).
40	P01/SCK	I	SCK	Pin to output the signal of communication with main microprocessor (key data output).
41	P00/INT0	I	MSRQ2	Pin to input the clock for communication with main microprocessor.
42	VSS			Pin to input the communication request signal from main microprocessor (per 8-bits).
				GND pin.

CIRCUIT DESCRIPTION

6. Test mode

6-1. Setting by key on this unit itself

• Initial setting function

- 1) Setting method
While pressing the SYSTEM MEMORY key, plug in the power.
- 2) Contents
Every function is set to the initial status.

• Test mode setting

- 1) Setting method
While pressing the M1 key, plug in the power.
- 2) Canceling method
Plug out the power, then plug in the power again.
In this case, however, the tuner's test frequency EQ memory is held.
- 3) Contents
• Tuner frequencies are set as follows

Channel	Destination	K		E	
1	FM	87.5MHz	FM	87.5MHz	
2	FM	89.1MHz	FM	89.1MHz	
3	FM	90.0MHz	FM	90.0MHz	
4	FM	92.0MHz	FM	92.0MHz	
5	FM	94.0MHz	FM	94.0MHz	
6	FM	98.0MHz	FM	98.0MHz	
7	FM	100.1MHz	FM	100.1MHz	
8	FM	102.0MHz	FM	102.0MHz	
9	FM	106.0MHz	FM	106.0MHz	
10	FM	108.0MHz	FM	108.0MHz	
11	AM	530.0kHz	AM	531.0kHz	
12	AM	630.0kHz	AM	630.0kHz	
13	AM	990.0kHz	AM	990.0kHz	
14	AM	1440.0kHz	AM	1440.0kHz	
15	AM	1610.0kHz	AM	1602.0kHz	
16	AM	(1700.0kHz)			

1700kHz is set only with the WIDE mode.

• EQ PGM memory setting

B : All max.

C : All min.

• FL and LEDs all light

However, the spectrum analyzer display, through dubbing display and rear/center display sections do not light.

This all lighting is canceled by operating an other key on this unit itself than the POWER key.

• Rear and center speaker volume up/down operation

3 points of +20dB, 0dB and -50dB

• Delay time up/down operation

With DOLBY SURROUND, 3 points of 30.0ms, 22.5ms and 15.0ms.

With THEATER SURROUND, 3 points of 30.0ms, 15.0ms and 0ms.

• EQ level up/down operation

3 points of +12dB, 0dB and -12dB.

CIRCUIT DESCRIPTION

7. Compressor/Expander IC : μ PC1571C (X08- : IC6)

7-1. Analog converter circuit

The S/N ratio is lowered due to the digital delay circuit. To offset this, a noise reduction is applied.

The signal is compressed down to half the dynamic range by the compressor circuit and is passed through a digital delay circuit. After that, it is expanded to twice by the expander circuit to ensure the original dynamic range.

The μ PC1571C is a high-performance integrated circuit capable of constituting a high-precision analog converter by a lesser number of externally connected components.

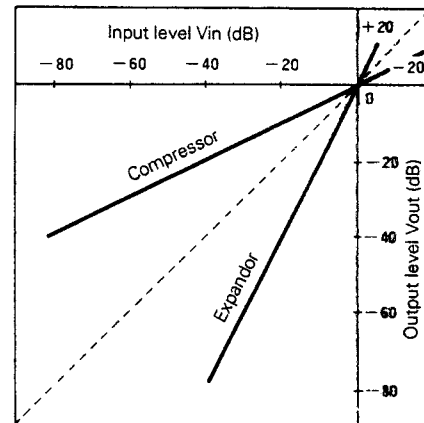
Incorporated within one package are a reference voltage circuit and a two-fold operation amplifier, gain cell and rectifier.

This IC can be applied to a limiter, a voltage controlled amplifier, an ordinary home-use device noise reduction circuit, etc., including a compander as in a telephone system.

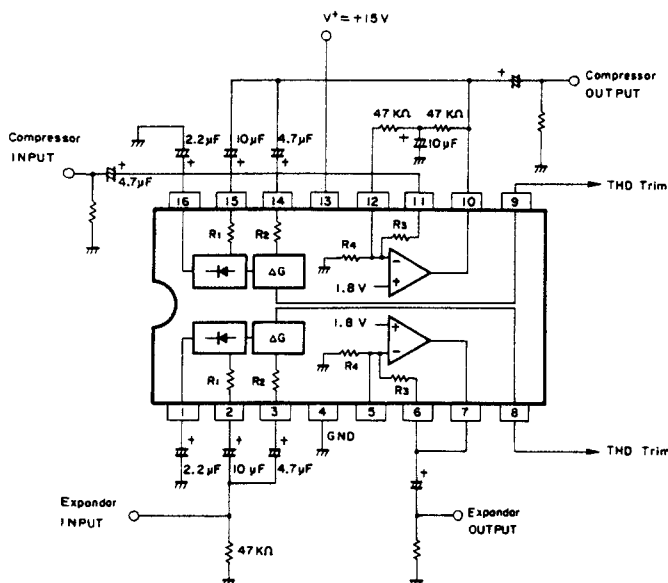
7-2. Features

- Operation on single power, +6V to +16V
- With built-in identical circuits of 2 channels, a compander can be formed by one package.
- Dynamic range, approx. 70dB
- Distortion rate adjustable

7-3. Standard transfer characteristics



7-4. Standard application circuit example

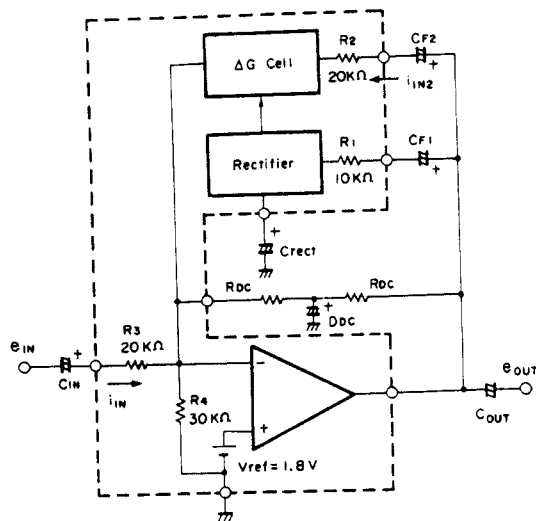


7-5. Description of terminals

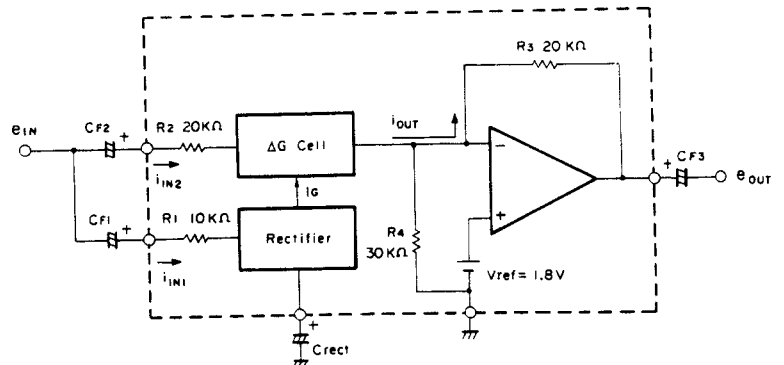
Pin No.	Function	Pin No.	Function
1	Crect1	9	THD Trim 2
2	Rect IN 1	10	OUT 2
3	ΔG Cell IN 1	11	R3 2
4	GND	12	Ii 2
5	Ii 1	13	Vcc
6	R3 1	14	ΔG Cell IN 2
7	OUT 1	15	Rect IN 2
8	THD Trim 1	16	Crect2

CIRCUIT DESCRIPTION

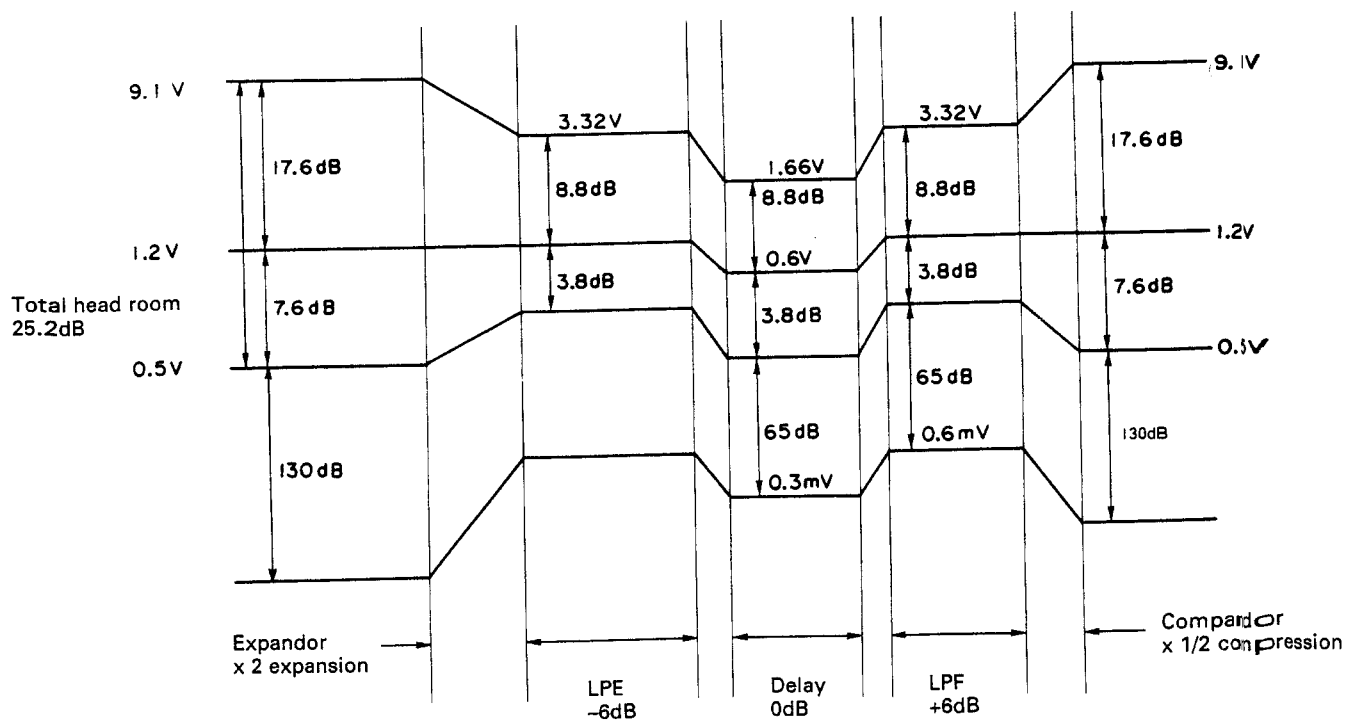
7-6. Compressor application circuit example



7-7. Operation as an expander



7-8. Theoretical values of head room and noise level with compressor/expander circuit



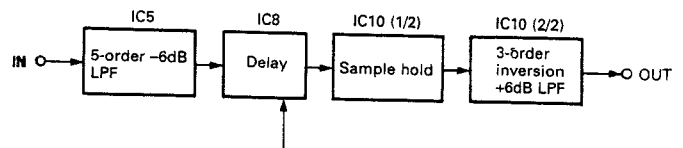
CIRCUIT DESCRIPTION

8. Digital delay : YM3428 (X08- : IC8)

8-1. Outline

IC8, a one-chip delay with one input system and two output systems, is controlled by all microprocessor serial data. Its inside is of a 14-bit configuration, and a PCM modulation is used.

In this unit, one input system and one output system are used, upon which PRO LOGIC, THEATER or HALL the rear speaker output is emitted as a delay output from IC10 (2/2).



8-2. Function outline

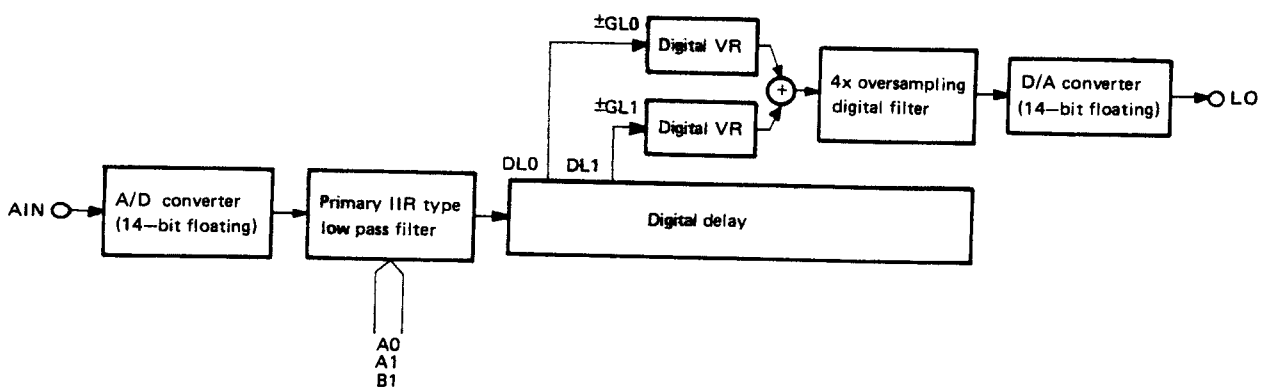
As shown in the internal process flow of figure, the analog signal input from pin AIN is converted into a digital form of floating 14-bit at a sampling rate of 24.9kHz by an A/D converter operating in a 14-bit floating manner and is entered to the primary IIR type low pass filter on the next stage. (Concerning this filter, its cutoff frequency can be controlled by the entry of coefficients to registers A0, A1 and B1 from a microprocessor connected.)

The digital delay unit, an RAM with four output taps, permits selection between tap positions by registers DL0, DL1, DR0 and DR1.

The respective outputs of these four taps are entered to their corresponding digital volume units, where are in turn subject to a digital attenuation process on coefficients of volume registers CL0, CL1, CR0 and CR1. Subsequently, in adder circuits, they undergo an addition process of L0 + L1 and R0 + R1 and are input to quadruple oversampling digital filters, in which loopback noises occurring in D/A conversion outputs are then attenuated with a reject band property of about -25dB, thus helping the externally connected low pass filters. The digital input to a D/A converter receives a quadruple sampling rate of 99.4kHz.

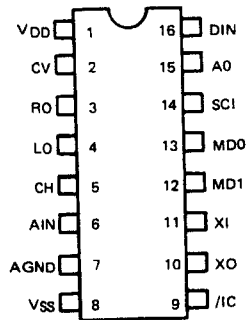
As regards the actuality of this digital processing system, a DSP process is made by an ROM type program within an LSI.

For preset modes, necessary parameters are put in a ROM in order to obtain carefully intended characteristics without entry of coefficients from a personal computer.

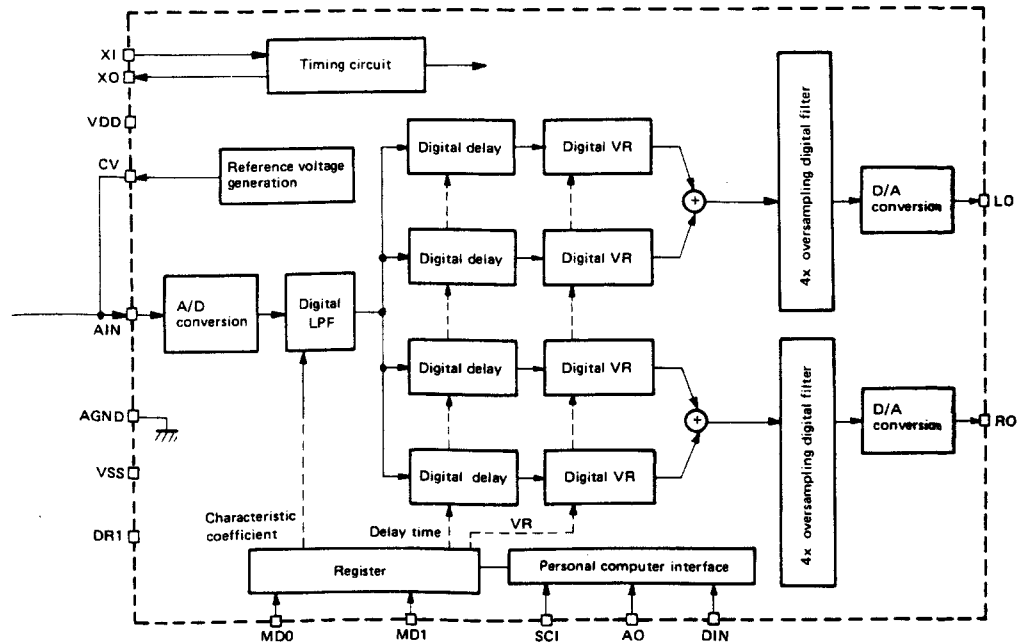


CIRCUIT DESCRIPTION

8-3. Terminal connection diagram



8-4. Block diagram



8-5. Explanation of terminals

Pin No.	Pin name	I/O	Description
1	VDD	-	+5V current.
2	CV	O	A/D conversion reference voltage (+2.5V) output pin.
3	RO	O	R-ch output pin (D/A conversion analog output).
4	LO	O	L-ch output pin (D/A conversion analog output).
5	CH	O	Sample-hold capacitor external connection pin.
6	AIN	I	Analog signal input pin (input with the reference of the CV voltage).
7	AGND	-	Grounding pin of A/D and D/A converter sections (Needs to be connected with VSS outside).
8	VSS	-	System grounding pin of digital system and the LSI.
9	/IC	*I	Reset pin.
10	XO	O	X'tal oscillator connection pins.
11	XI	I	(XI is the clock input pin when personal computer is used.)
12	MD1	*I	Mode setting pins.
13	MD0	*I	
14	SCI	I	Data shift clock input pin when personal computer is used.
15	AO	I	Address/data identification signal input pin when personal computer is used.
16	DIN	I	Data input pin when personal computer is used.

Any pin marked with * has a pull-up resistor connected.

KR-V8020

CIRCUIT DESCRIPTION

9. Dolby B type noise reduction

: LA2730 (X08- : IC9)

9-1. Outline

This noise reduction circuit is completely different from Dolby B for cassette decks in respect to frequency characteristic.

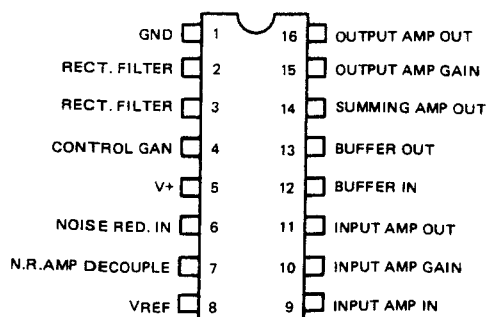
With 500mV = 0dB at Dolby level point 6, a gain control is made by IC6 in IN so as to obtain the same level as in OUT so that IN is of 500mV = 0dB.

Table shows input vs. output characteristics.

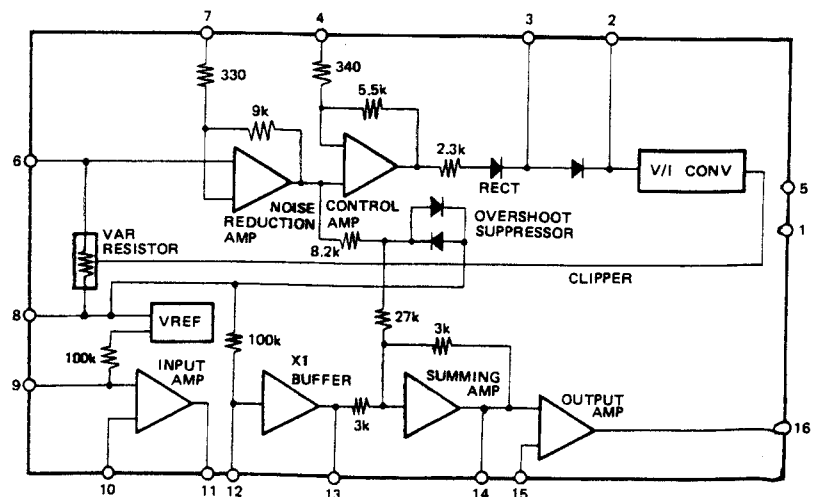
9-2. Modified B type processor decode characteristics

Hz dB	100	200	500	700	1.0K	1.4k	2.0k	3.0k	5.0k	7.0k	10.0k
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-5	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-10	0.0	0.0	-0.3	-0.4	-0.4	-0.4	-0.3	-0.3	-0.3	-0.3	-0.3
-15	0.0	0.0	-0.8	-1.1	-1.4	-1.3	-1.2	-0.9	-0.7	-0.7	-0.7
-20	0.0	0.0	-0.8	-1.6	-2.4	-3.0	-3.0	-2.4	-1.7	-1.5	-1.4
-25	0.0	0.0	-0.9	-1.7	-2.8	-3.8	-4.6	-4.9	-4.1	-3.4	-2.9
-30	0.0	0.0	-1.0	-1.7	-2.9	-4.0	-5.0	-5.4	-5.4	-5.6	-5.2
-35	0.0	0.0	-1.0	-1.7	-2.9	-4.0	-5.0	-5.5	-5.6	-5.8	-5.7
-40	0.0	0.0	-1.0	-1.7	-2.9	-4.0	-5.0	-5.5	-5.7	-5.8	-5.8

9-3. Terminal connection diagram



9-4. Block diagram



ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
FM SECTION SELECTOR: FM							
1	DETECTOR	(A) 98.0MHz 1kHz, ± 75 kHz dev 60dB μ (ANT input)	Connect a DC voltmeter between TP3 and TP4.	AUTO or MONO 98.0MHz	L4 (X05-)	0V	(a)
2	DISTORTION (MONO)	(C) 98.0MHz 1kHz, ± 68.25 kHz dev Selector: L or R Pilot: ± 6.75 kHz dev 60dB μ (ANT input)	(B)	98.0MHz	L5 (X05-)	Minimum distortion.	
3	VCO	(A) 98.0MHz 0 dev 100dB μ (ANT input)	Connect a frequency counter between TP5 and GND.	AUTO 98.0MHz	VR3 (X05-)	19.00kHz	(b)
4	DISTORTION (STEREO)	(C) 98.0MHz 1kHz, ± 68.25 kHz dev Selector: L or R Pilot: ± 6.75 kHz dev 60dB μ (ANT input)	(B)	98.0MHz	IFT (Front end)	Minimum distortion.	
5	SEPARATION (E Type)	(C) 98.0MHz Stereo signal 60dB μ (ANT input)	(B)	AUTO 98.0MHz	VR4 (X05-)	Minimum crosstalk.	
6	TUNING LEVEL	(A) 98.0MHz 0 dev 14dB μ (ANT input) 75 μ	(B)	AUTO or MONO 98.0MHz	VR1 (X05-)	Adjust VR1 and stop at the point where FL1(TUNED) goes on.	
AM SECTION Keep the AM loop antenna installed. SELECTOR: AM							
(1)	BAND EDGE (Low)	—	Connect a DC voltmeter between TP1(GND) and TP2.	—	L9 (X05-)	1.5V	(c)
(2)	BAND EDGE (High)	—	Connect a DC voltmeter between TP1(GND) and TP2.	—	TC2 (X05-)	8.0V	(c)
Repeat alignments (1) and (2) several times.							
(3)	RF ALIGNMENT (1)	(D) 600kHz 20dB μ (ANT input)	(B)	—	L8 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
(4)	RF ALIGNMENT (2)	(D) 1400kHz 20dB μ (ANT input)	(B)	—	TC1 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
Repeat alignments (3) and (4) several times.							
(5)	IF TRANSFORMER	(D) 1000kHz 20dB μ (ANT input)	(B)	—	L10 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
(6)	TUNING LEVEL	(D) 1000kHz 36dB μ (ANT input)	(B)	—	VR2 (X05-)	Adjust VR2 and stop at the point where FL1(TUNED) goes on.	
AUDIO SECTION							
(1)	IDLE CURRENT	—	(E) Connect a DC voltmeter across CP1(L) CP2(R)	Volume: 0	VR1(L) VR2(R) (X89-)	10mV	(d)

REGLAGE

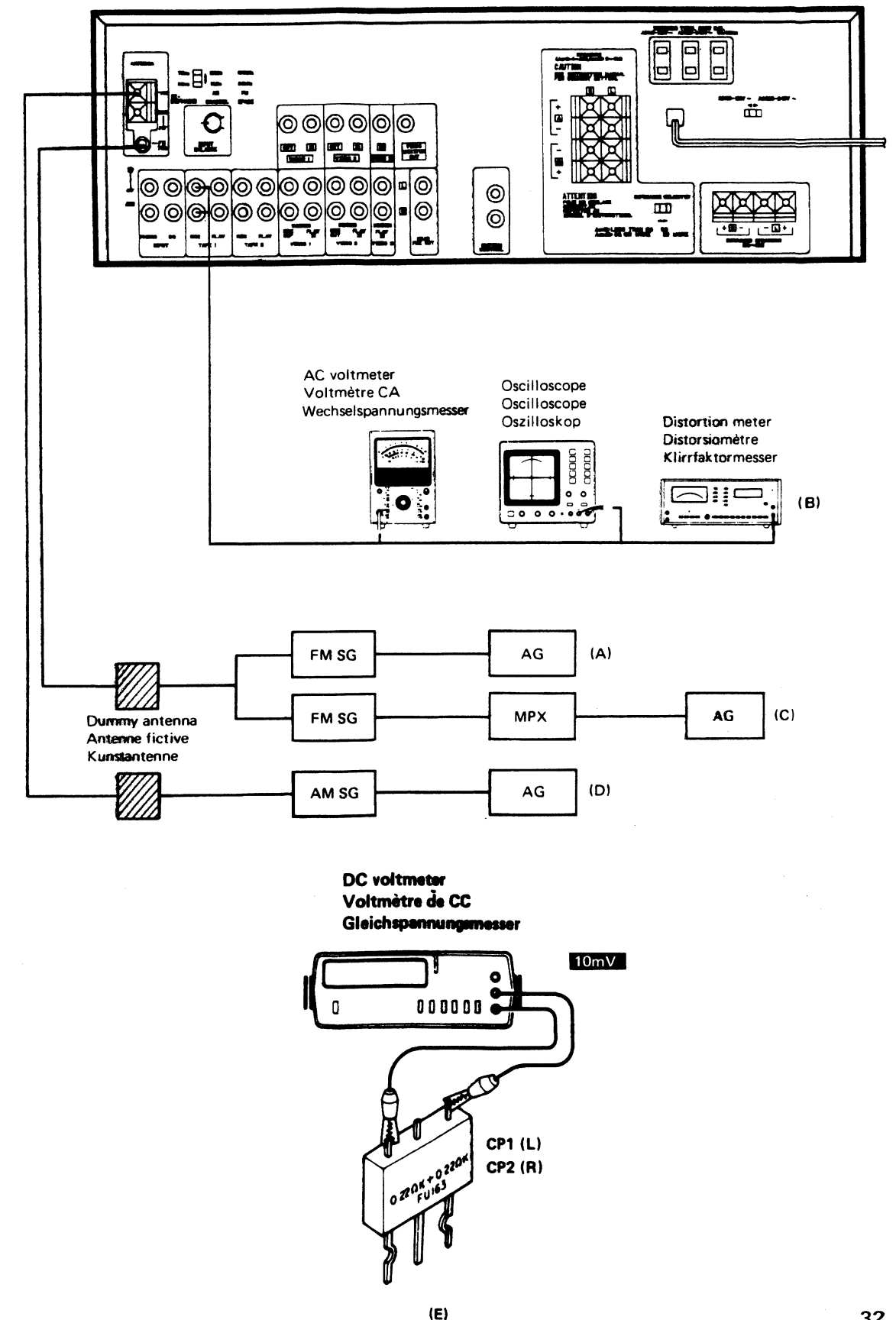
N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU TUNER	POINT DE L'ALIGNEMENT	ALIGNER POUR	FIG.
SECTION MF		SELECTEUR : FM					
1	DETECTEUR	(A) 98,0MHz 1kHz.±75kHz dév 60dBu(Entrée ANT)	Relier un voltmètre CC entre les TP3 et TP4.	AUTO ou MONO 98,0MHz	L4 (X05-)	0V	(a)
2	DISTORSION (MONO)	(C) 98,0MHz 1kHz.68,25kHz dév Selection:1 ou 2 Signal pilote: ±6,75kHz dév 60dBu(Entrée ANT)	(B)	98,0MHz	L5 (X05-)	Distorsion minimale.	
3	OSCILLATEUR CONTROLE PAR LA TENSION	(A) 98,0MHz 0 dév 100dBu(Entrée ANT)	Relier un compteur de fréquence entre les TP5 et GND.	AUTO 98,0MHz	VR3 (X05-)	19,00kHz	(b)
4	DISTORSION (STEREO)	(C) 98,0MHz 1kHz.68,25kHz dév Selection:1 ou 2 Signal pilote: ±6,75kHz dév 60dBu(Entrée ANT)	(B)	98,0MHz	Tête H.F. IFT (X05-)	Distorsion minimale.	
5	SEPARATION (E type)	(C) 98,0MHz Signal stéréo 60dBu(Entrée ANT)	(B)	AUTO 98,0MHz	VR4 (X05-)	Diaphonie minimale.	
6	NIVEAU D'ACORDER	(A) 98,0MHz 0 dév -- 14dBu(Entrée ANT) 75Ω	(B)	AUTO ou MONO 98,0MHz	VR1 (X05-)	Ajuster VR1 et arrêter le mouvement de VR1 au moment où le FL1(TUNED)s'allume.	
SECTION MA		Laisser l'antenne bouche MA installée. SELECTEUR: AM					
(1)	BORD DE BANDE (Bas)	-	Relier un voltmètre entre les TP1(GND) et TP2.	-	L9 (X05-)	1,5V	(c)
(2)	BORD DE BANDE (Haut)	-	Relier un voltmètre entre les TP1(GND) et TP2.	-	TC2 (X05-)	8,0V	(c)
Répéter les points (1) et (2) plusieurs fois.							
(3)	ALIGNEMENT H.T. (1)	(D) 600kHz 20dBu(Entrée ANT)	(B)	-	L8 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
(4)	ALIGNEMENT H.T. (2)	(D) 1400kHz 20dBu(Entrée ANT)	(B)	-	TC1 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
Répéter les points (3) et (4) plusieurs fois.							
(5)	TRANSFORMATEUR F.I.	(D) 1000kHz 20dBu(Entrée ANT)	(B)	-	L10 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
(6)	NIVEAU D'ACORDER	(A) 1000kHz 36dBu(Entrée ANT)	-	-	VR2 (X05-)	Ajuster VR2 et arrêter le mouvement de VR2 au moment où le FL1(TUNED)s'allume.	
SECTION AUDIO							
[1]	COURBURE DE POLARISATION	-	(E) Connecter un voltmètre CC sur CP1(L) CP2(R)	Volume: 0	VR1(G) VR2(D) (X89-)	10mV	(d)

ABGLEICH

ADJUSTMENT/REGLAGE/ABGLEICH

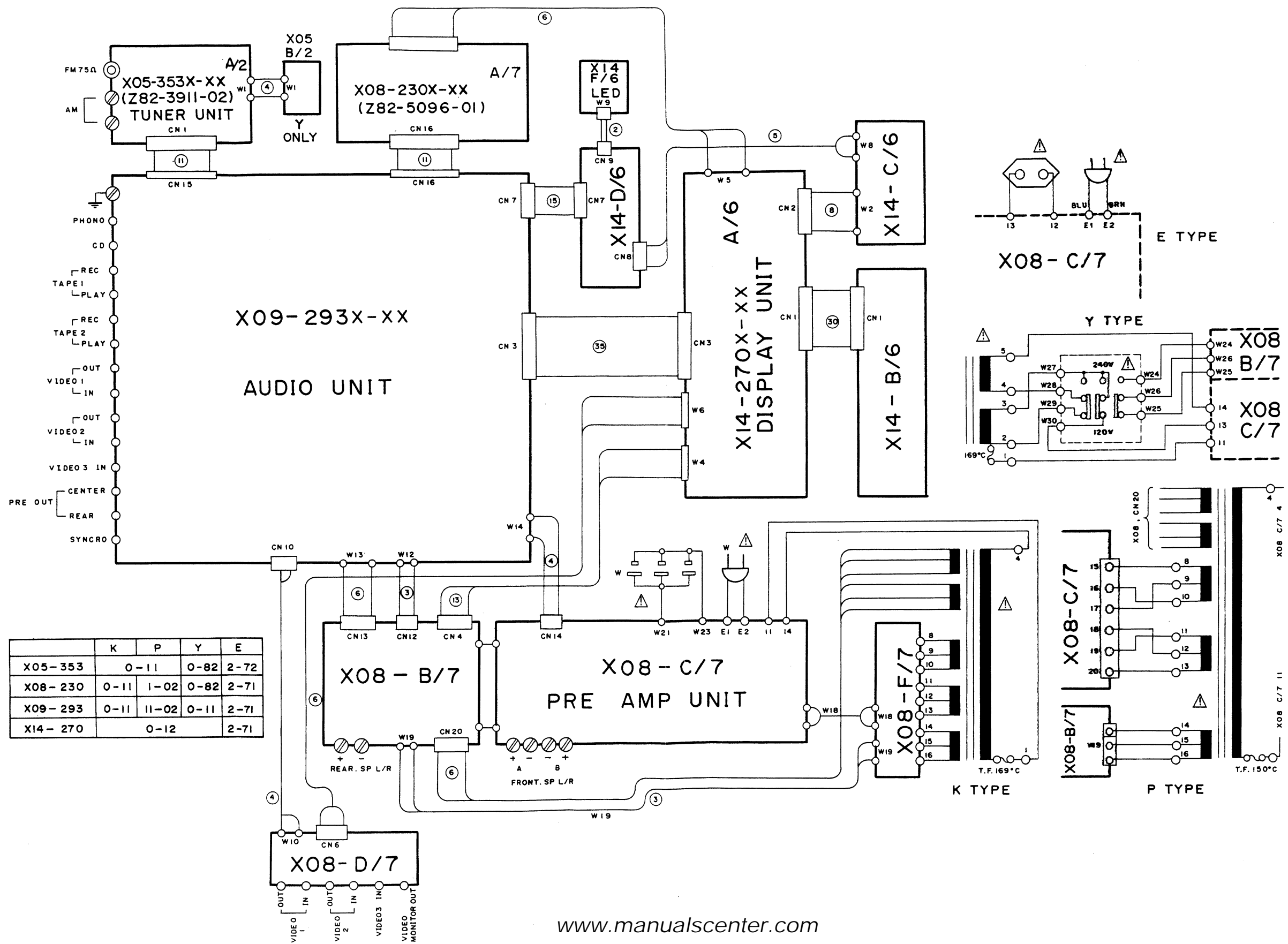
NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
UKW-EMPFANGSABTEILUNG WÄHLER: FM							
1	DETEKTOR	(A) 98,0MHz 1kHz.±75kHz Hub 60dBu(ANT-Eingang)	Einen Gleichspannungs- messer zwischen TP3 und TP4 anschließen.	AUTO oder MONO 98,0MHz	L4 (X05-)	0V	(a)
2	KLIRRFAKTOR (MONO)	(C) 98,0MHz 1kHz.±68,25kHz Hub Wähler: L oder R Pilotten: ±6,75kHz Hub 60dBu(ANT-Eingang)	(B)	98,0MHz	L5 (X05-)	Minimal Klirrfaktor.	
3	SPANNUNGS- GEREGELTER OSZILLATOR	(A) 98,0MHz 0 Hub 100dBu(ANT-Eingang)	Einen Frequenzzähler zwischen TP5 und GND anschließen.	AUTO 98,0MHz	VR3 (X05-)	19,00kHz	(b)
4	KLIRRFAKTOR (STEREO)	(C) 98,0MHz 1kHz.±68,25kHz Hub Wähler: L oder R Pilotten: ±6,75kHz Hub 60dBu(ANT-Eingang)	(B)	98,0MHz	Frontend IFT (X05-)	Minimal Klirrfaktor.	
5	STEREO KANAL TRENUNG (E Type)	(C) 98,0MHz Stereo Signal 60dBu(ANT-Eingang)	(B)	AUTO 98,0MHz	VR4 (X05-)	Minimal Klirrfaktor.	
6	ABSTIMM PEGEL	(A) 98,0MHz 0 Hub 14dBu(ANT-Eingang) 75Ω	(B)	AUTO oder MONO 98,0MHz	VR1 (X05-)	Den Pegel wiederstand aufdrehen, und dem VR1 halt geben wobei den FL1(TUNED) anzeiger leuchtet wird.	
MW-EMPFANGSABTEILUNG Die MW-Rahmenantenne angebracht lassen. WÄHLER: AM							
(1)	BANDKANTE (Niedrig)	-	Einen Gleichspannungs- messer zwischen TP1(GND) und TP2 anschließen.	-	L9 (X05-)	1,5V	(c)
(2)	BANDKANTE (Hoch)	-	Einen Gleichspannungs- messer zwischen TP1(GND) und TP2 anschließen.	-	TC2 (X05-)	8,0V	(c)
Abstimmungen (1) und (2) mehrere Male wiederholen.							
(3)	HF-ABGLEICH (1)	(D) 600kHz 20dBu(ANT-Eingang)	(B)	-	L8 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
(4)	HF-ABGLEICH (2)	(D) 1400kHz 20dBu(ANT-Eingang)	(B)	-	TC1 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
Abstimmungen (3) und (4) mehrere Male wiederholen.							
(5)	ZF-UBERTRAGER	(D) 1000kHz 20dBu(ANT-Eingang)	(B)	-	L10 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
(6)	ABSTIMM PEGEL	(A) 1000kHz 36dBu(ANT-Eingang)	-	-	VR2 (X05-)	Den Pegel wiederstand aufdrehen, und dem VR2 halt geben wobei den FL1(TUNED) anzeiger leuchtet wird.	
AUDIO-ABTEILUNG							
[1]	LEERLAUFSTROM	-	(E) Einen Gleichspannungs- messer über CP1(L) CP2(R) anschließen.	Volume: 0	VR1(L) VR2(R) (X89-)	10mV	(d)

System connections/Raccordements du système/System-Anschlüsse

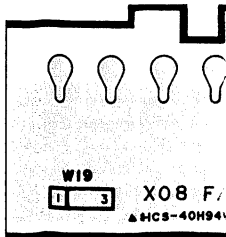
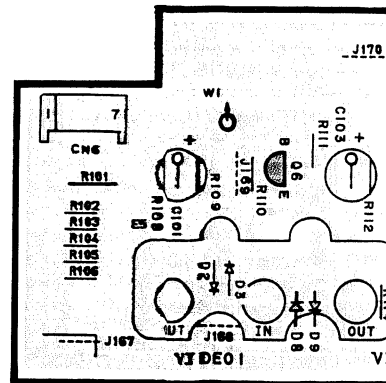
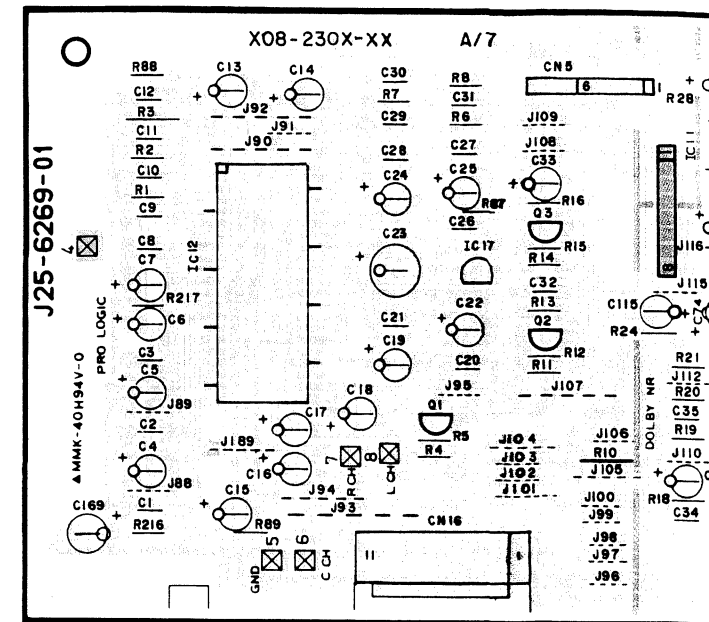
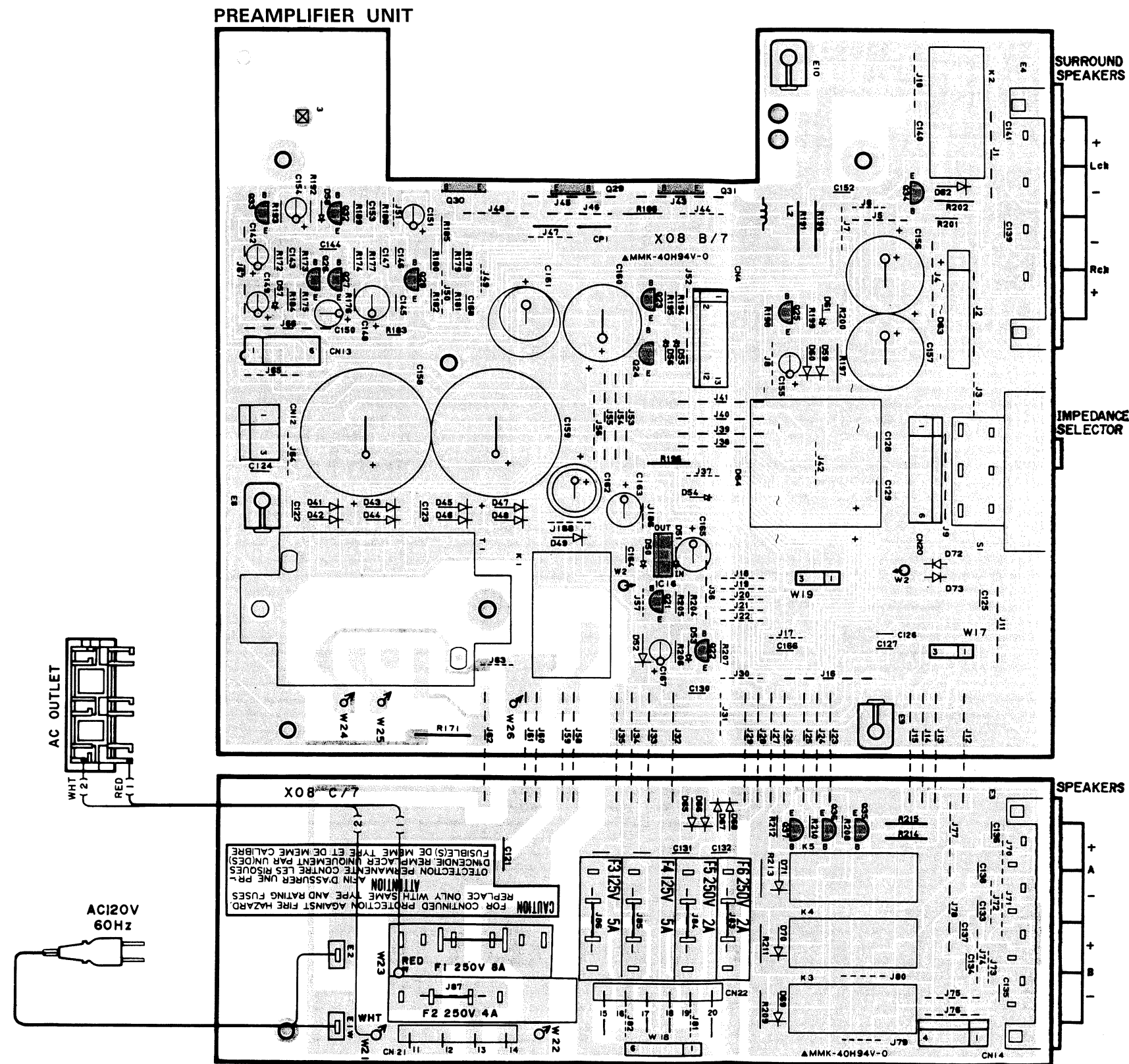


WIRING DIAGRAM

KR-V8020 KR-V8020



PC BOARD (Component side view)

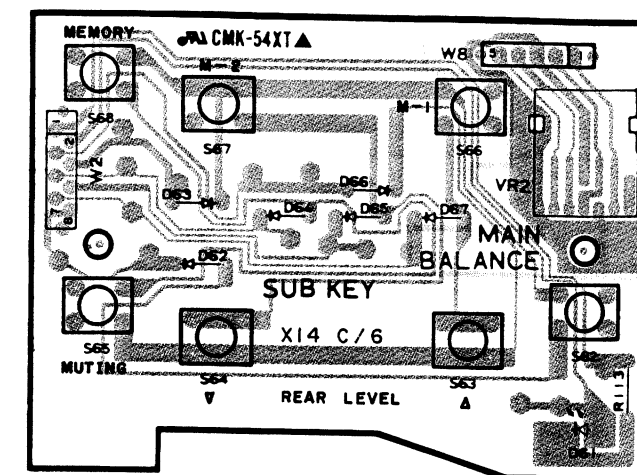
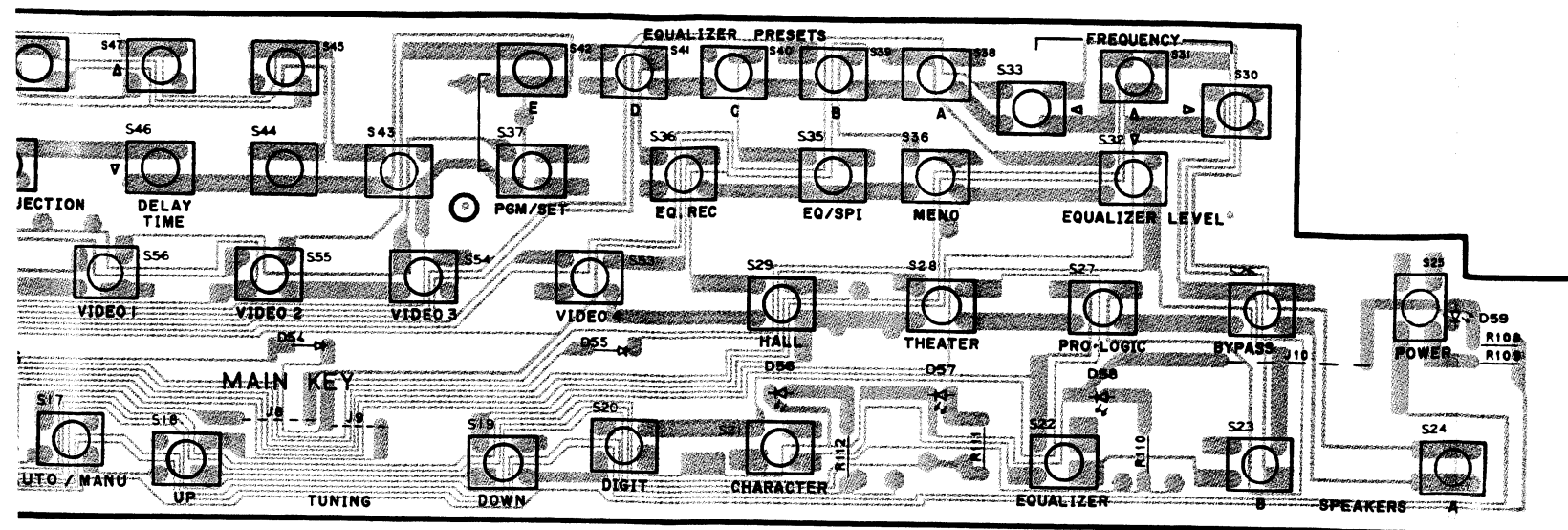


P	Q	R	S	T	U	V	W	X	Y
---	---	---	---	---	---	---	---	---	---

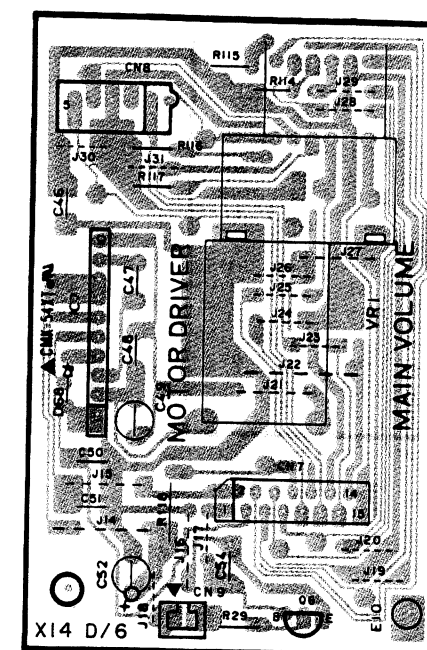
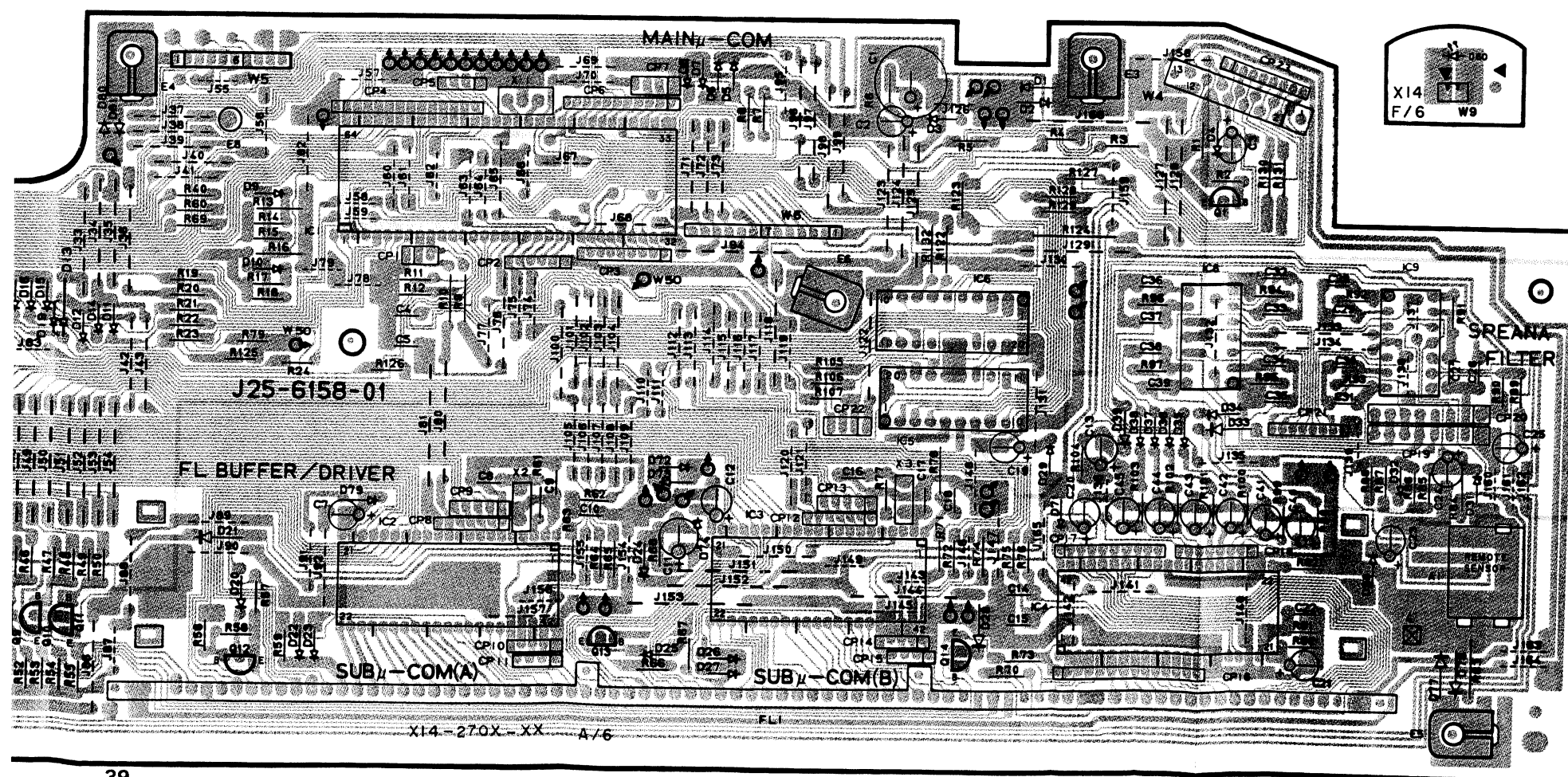


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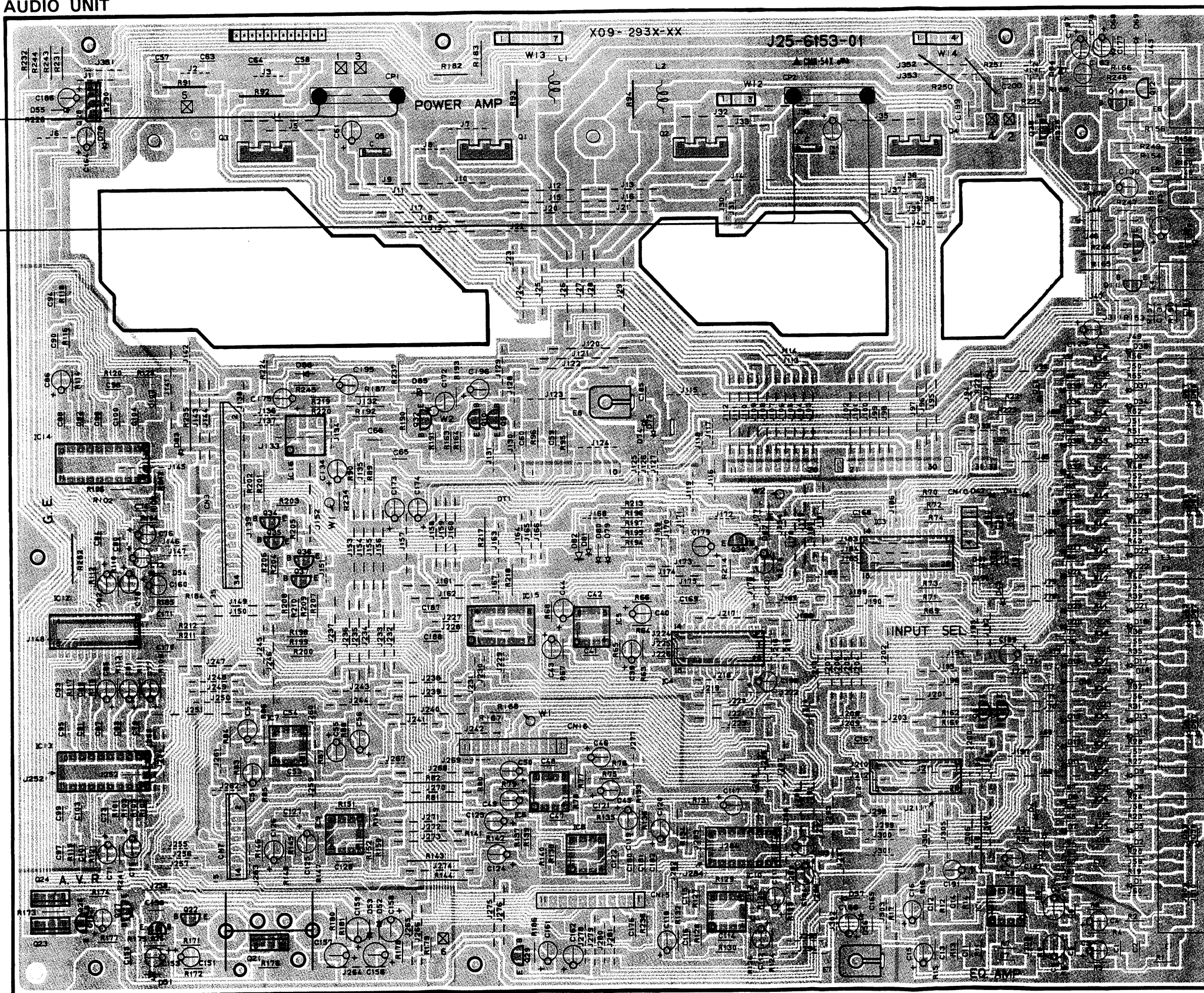
Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD (Component side view)

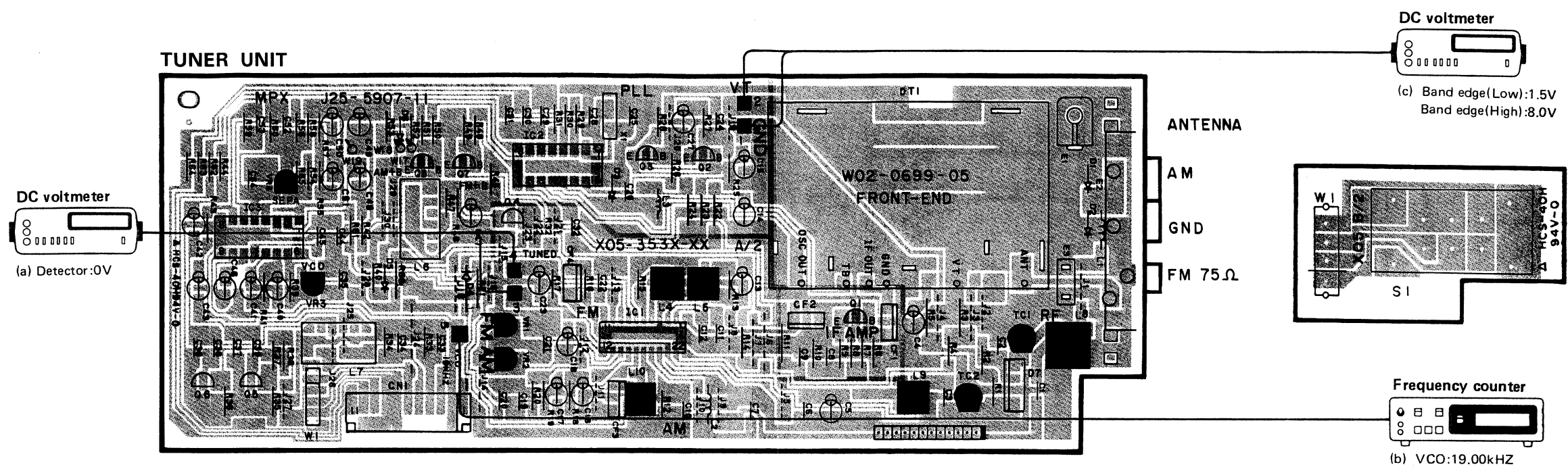
AUDIO UNIT

DC voltmeter
(d) Idle current:10mV

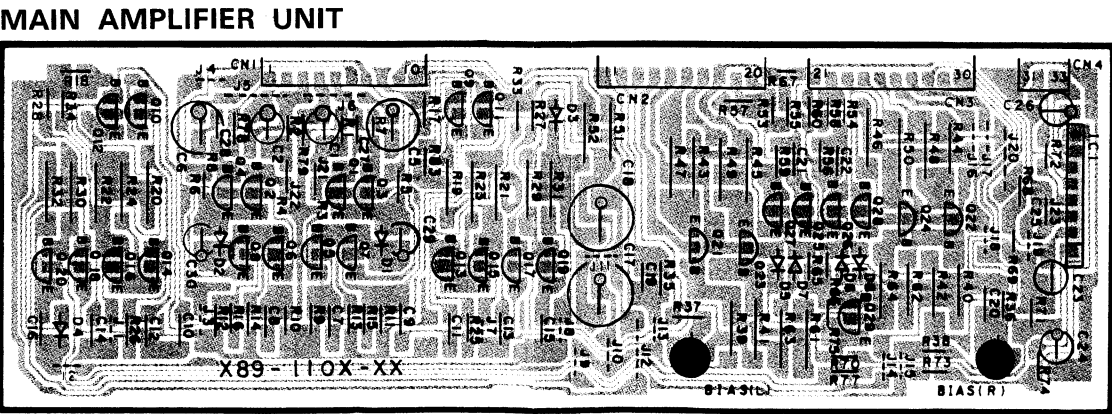
DC voltmeter
(d) Idle current:10mV



PC BOARD (Component side view)



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Refer to the schematic diagram for the values of resistors and capacitors.

1/4 C
2/4 E

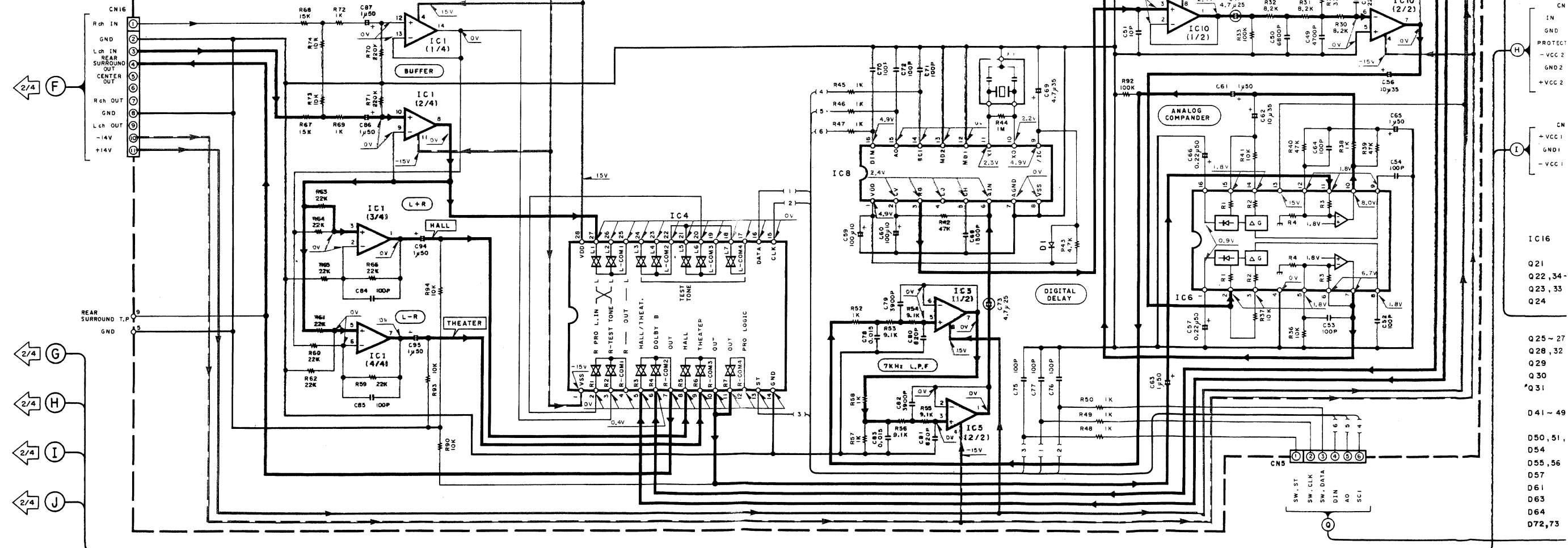
(X08-230X-XX) (B/7), (C/7)

DESTINATION	Ref. No.	C121	C124, 125, 130 133-141, 144	C145	R171	S2	F1	F2	F3	F4	F5	F6	W18	W19	W21	W23	W24-30	CN22	T1	J63
K	0-11	400V	NO	18P	YES	NO	7A	NO	5A	5A	J64	J63	YES	YES	YES	YES	NO	NO	L02-8911-05	YES
P	1-02	400V	NO	18P	YES	NO	7A	NO	5A	2A	2A	NO	NO	YES	YES	YES	NO	YES	L02-8911-05	NO
Y	0-82	250V	NO	18P	NO	YES	4A	4A	J66	J65	J64	J63	YES	YES	NO	YES	YES	NO	L02-8914-05	YES
E	2-71	400V	YES	100P	NO	NO	T3.15	T2.5	T3.15	T3.15	T2	T2	YES	NO	NO	NO	NO	NO	L02-8918-05	YES

IC1 : NJM2058D
IC4 : TC9162N
IC5, 11 : NJM4565L
IC6 : μ PC1571C
IC8 : YM3428
IC9 : LA2730
IC10 : NJM072BL
D1 : ISS133 or HSS104

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(X08-230X-XX) (A/7)

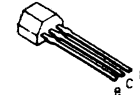


2SA733(A)
2SA999
2SC1845

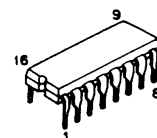


2SC1923
2SC945(A)

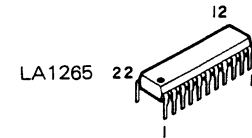
2SA933S
2SC1740S



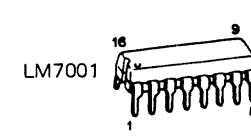
AN7470



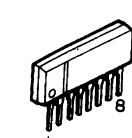
LA1265



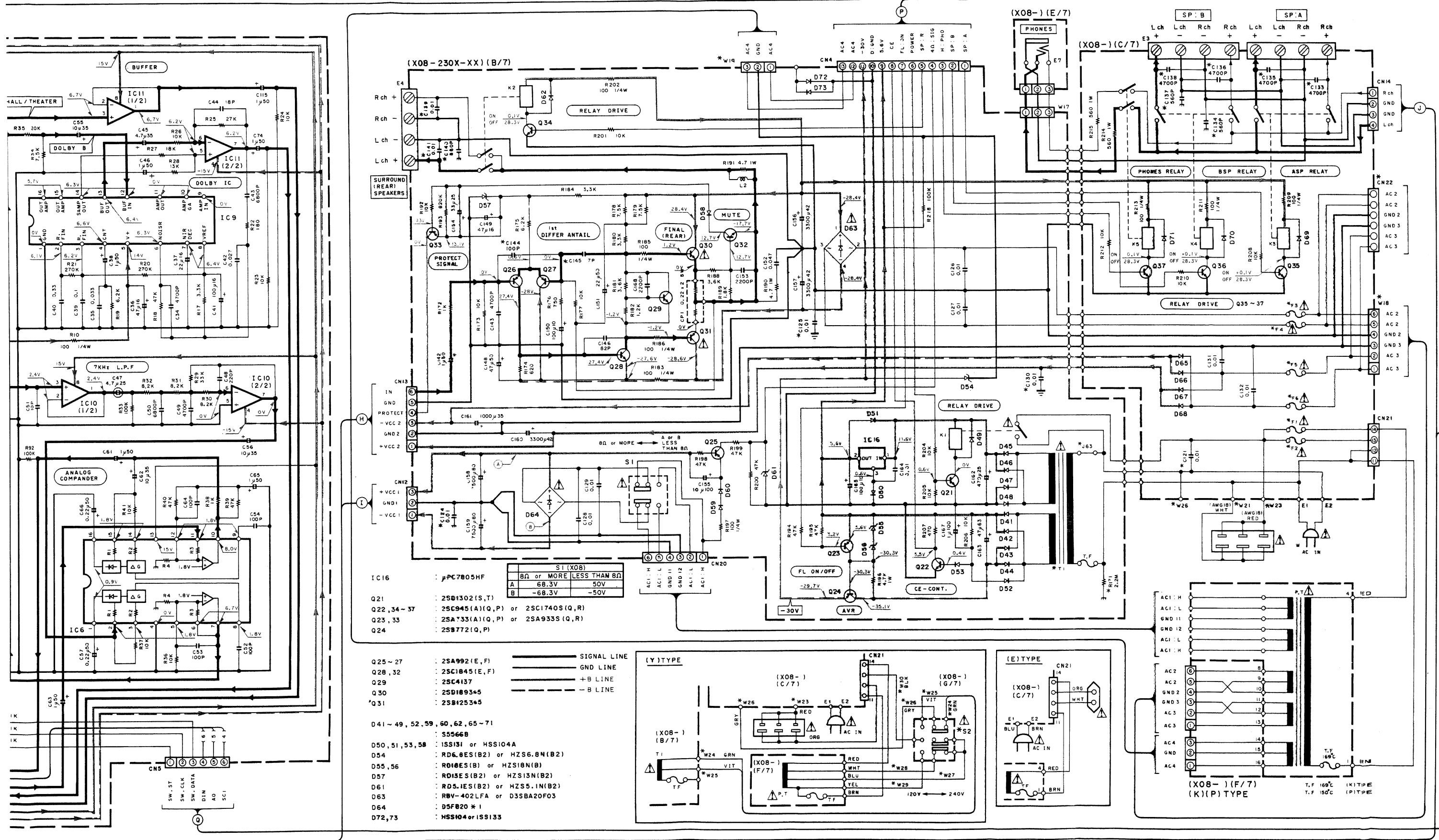
LM7001



NJM2246L



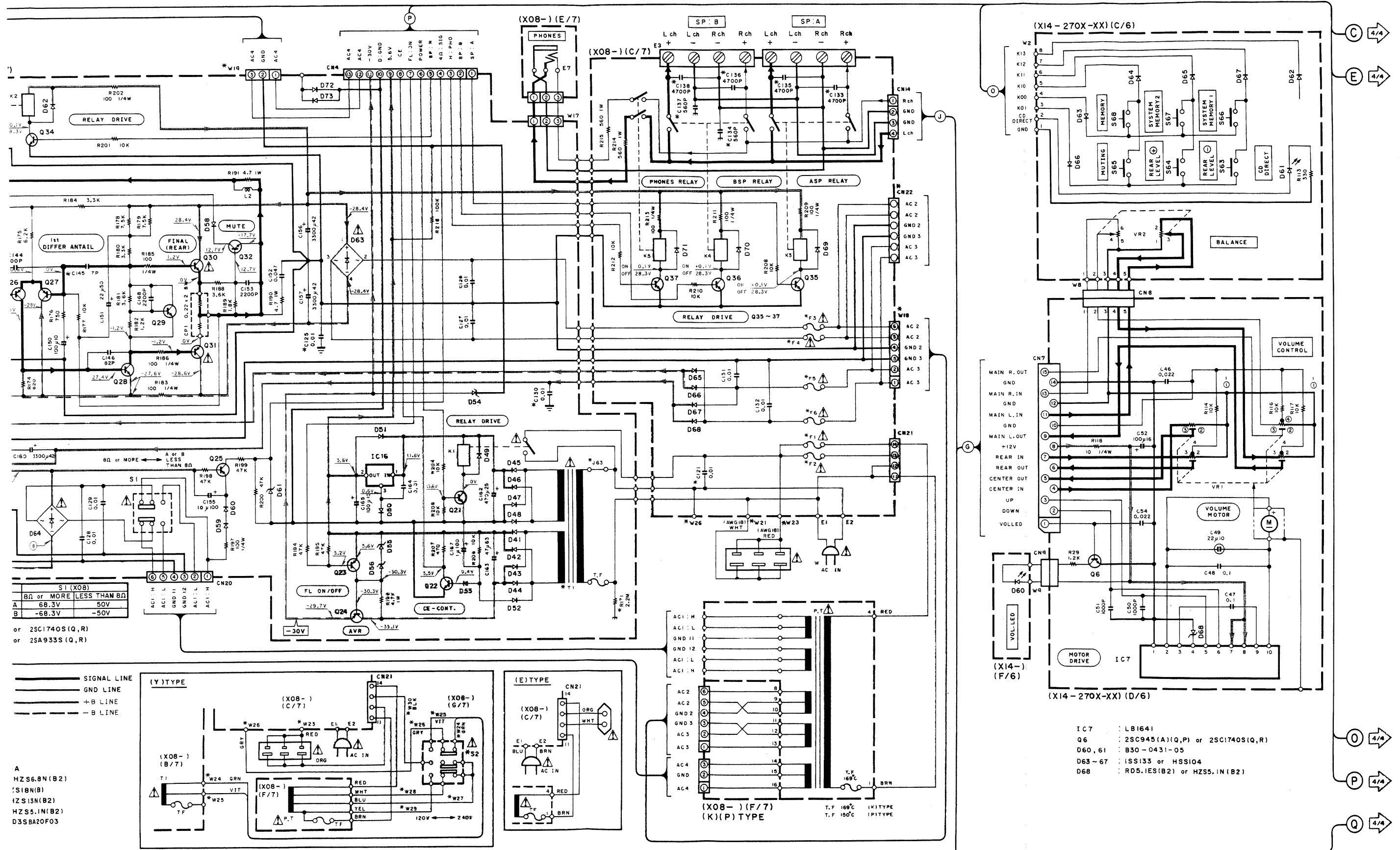
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ Indicates safety critical components. To reduce the risk of electric shock, leakage current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.



DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.



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des variations inhérentes aux appareils et aux instruments
mesure individuels.

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1/4 C
2/4 E

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3/4 O
3/4 P
3/4 Q

2SA1123
2SA733(A)
2SA992
2SC1845

2SC2003
2SC2631
2SC2878
2SC945(A)

2SA933S
2SC1740S

2SD1266

2SC4137

2SA1535
2SC3944

2SD1718
2SB1163

M5229P

TC9176P

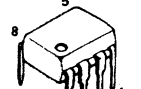
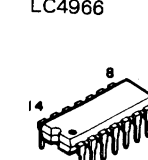
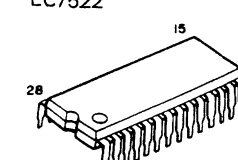
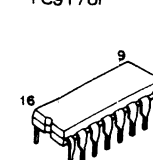
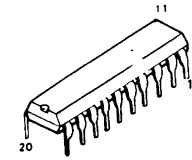
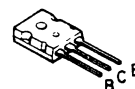
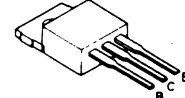
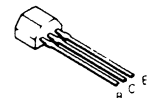
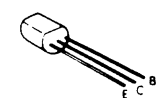
LC7522

LC4966

μPC4570C-A

NJM4558D

μPC123

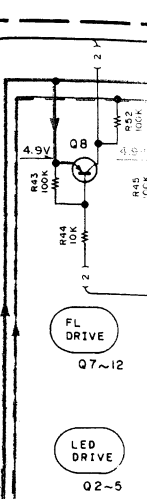


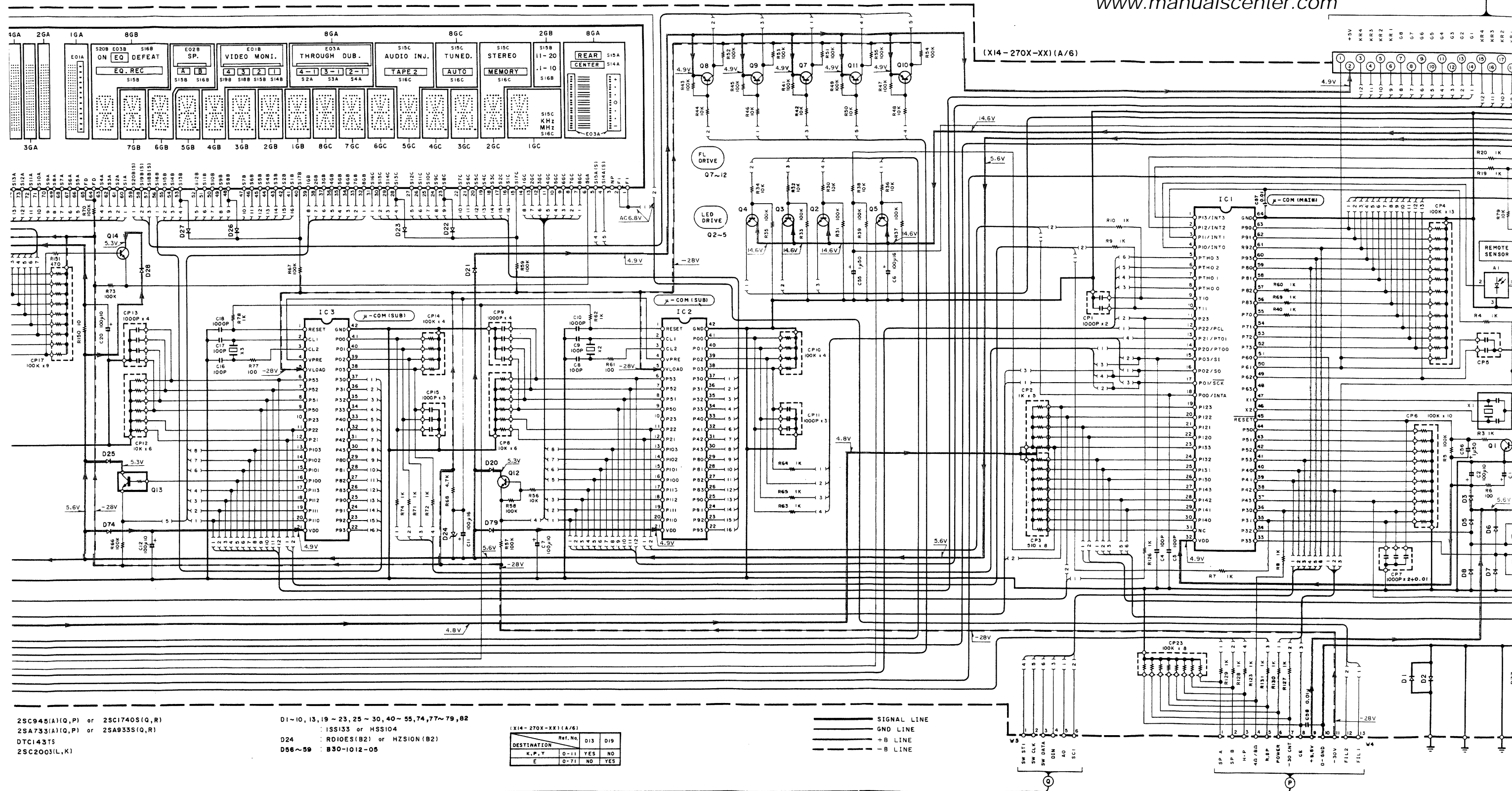
IC1 : μPD75116CW-074
IC2,3 : μPD7537ACU-220
IC4 : LC7565
IC5,6 : CXD1067P

Q1~5,12 : 2SC945(A)(Q,P) or 2SC1740S(Q,R)
Q7~11 : 2SA733(A)(Q,P) or 2SA933S(Q,R)
Q13 : DTC143TS
Q14 : 2SC2003(L,K)

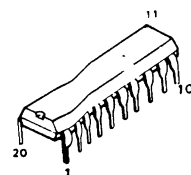
D1~10,13,19~23,25~30,40~55,74,77~79,82 : 1SS133 or HSS104
D24 : RD10ES(B2) or HZS10N(B2)
D56~59 : B30-1012-05

DESTINATION	Ref. No.	D13	D19
N.P.T	0-11	YES	NO
C	0-71	NO	YES

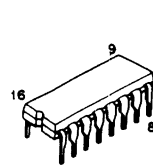




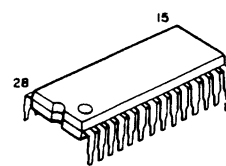
M5229P



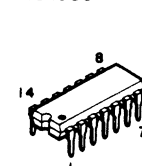
TC9176P



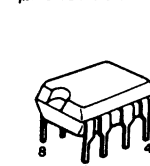
LC7522



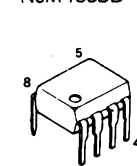
LC4966



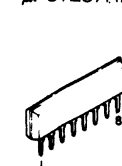
µPC4570C-A



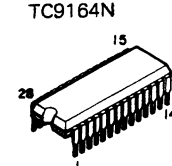
NJM4558D



µPC1237HA



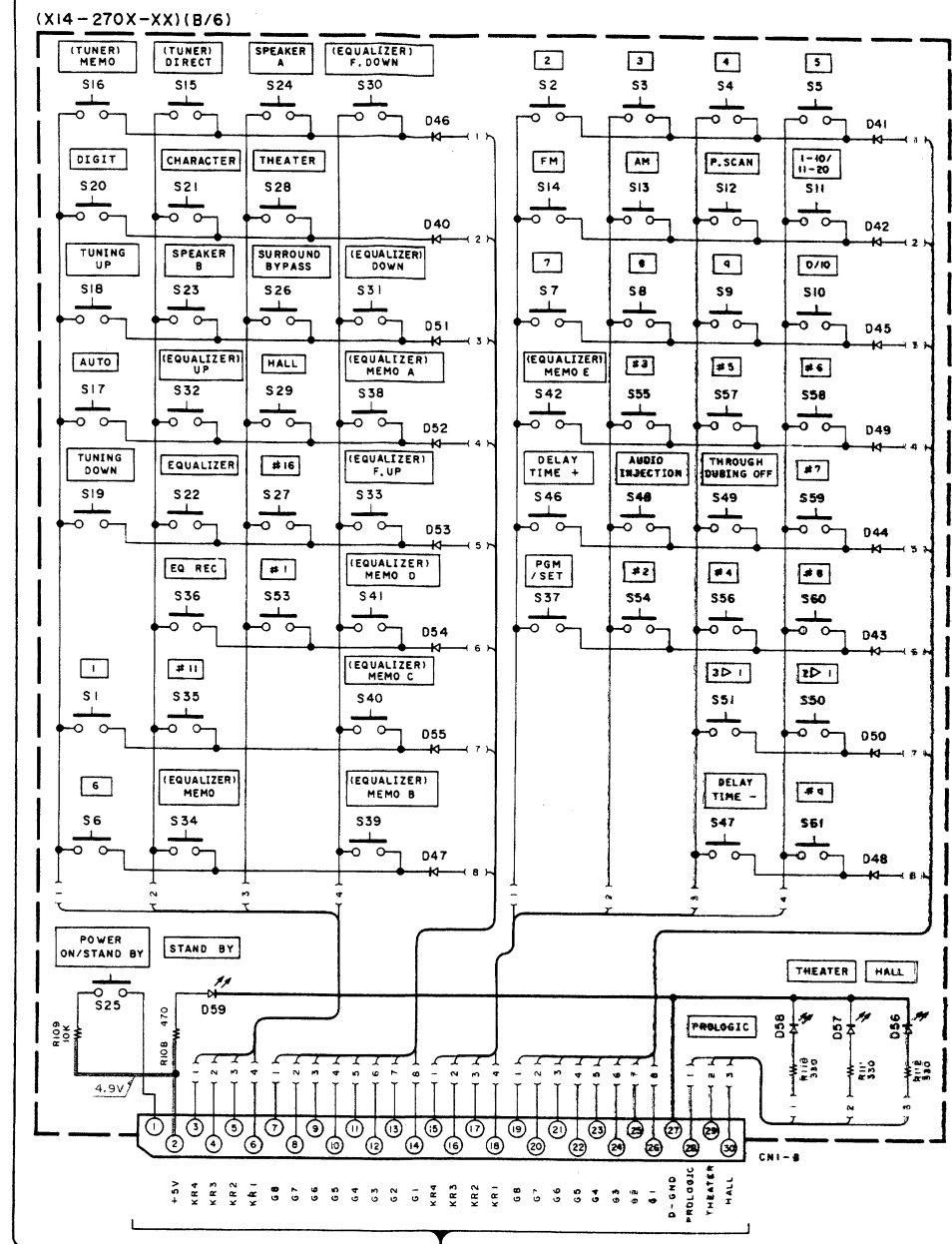
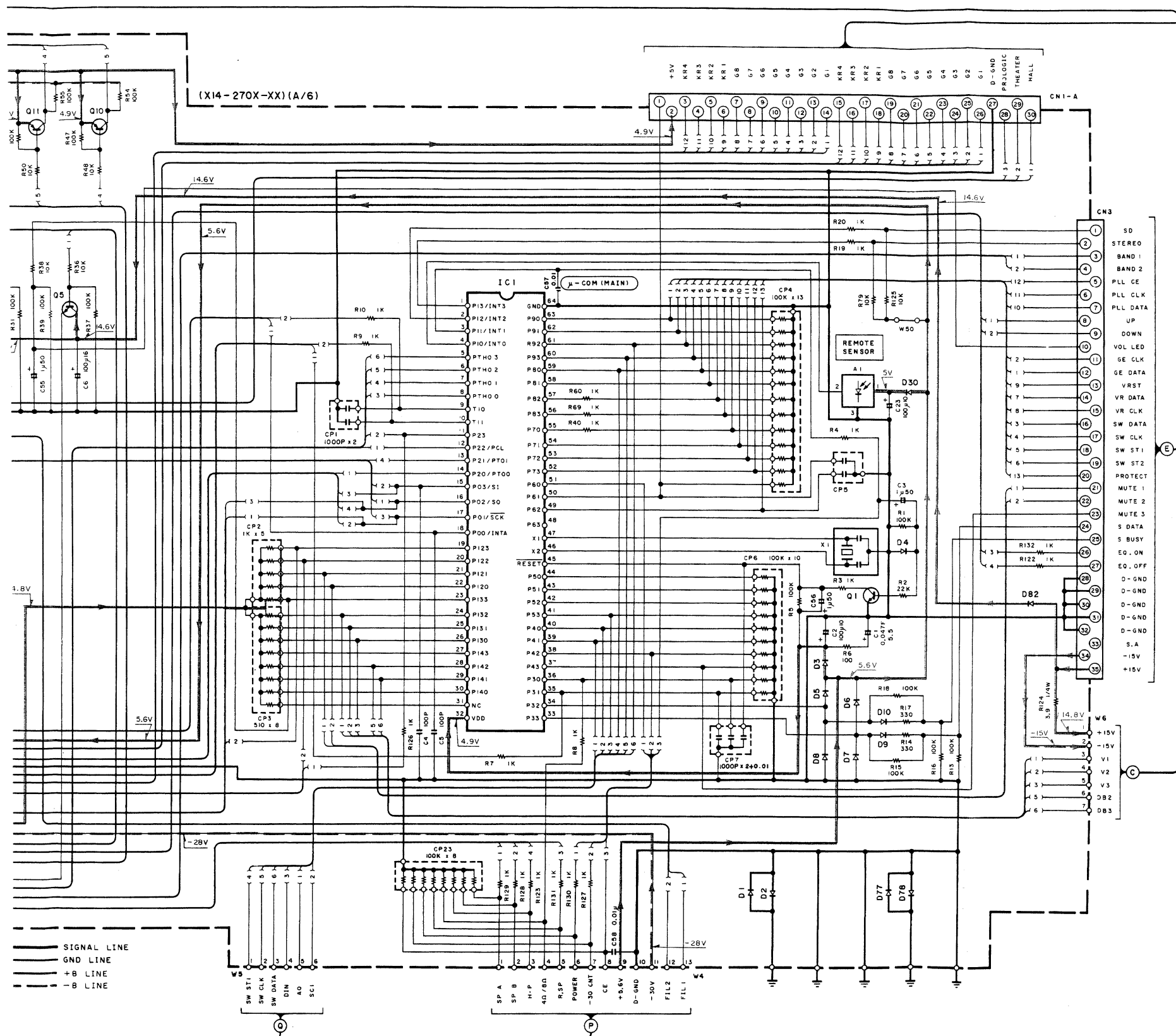
TC9163N
TC9164N



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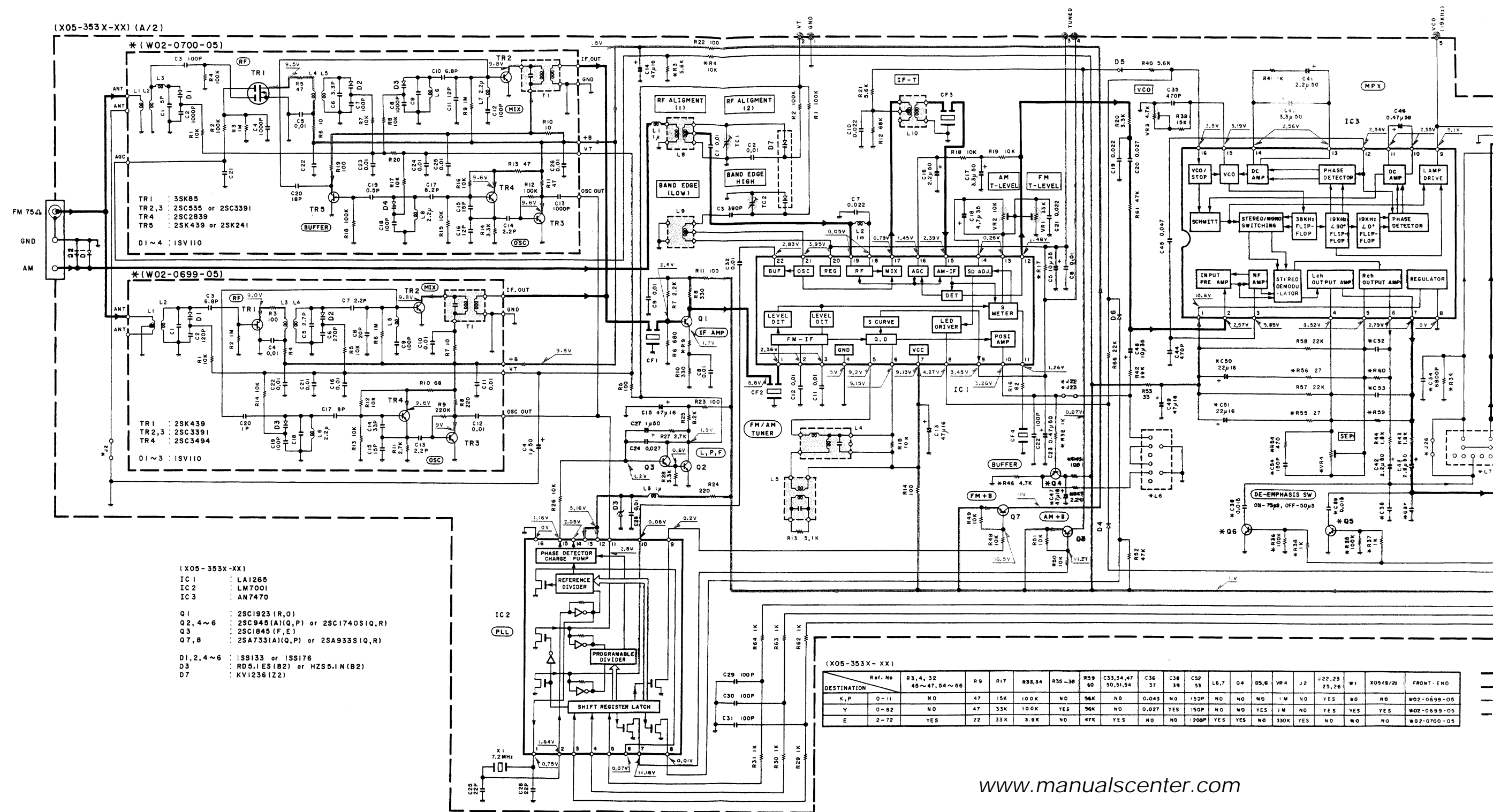
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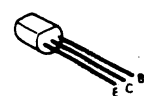
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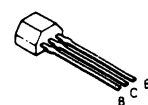
KR-V8020
KENWOOD



2SA733(A) 2SC945(A)
2SA992 2SD1302
2SC1845



2SA933S
2SC1740S



2SB772



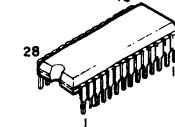
2SC4137



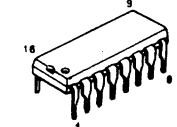
2SD1893
2SB1253



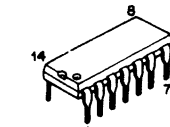
TC9162N



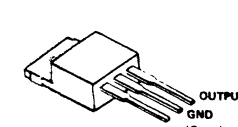
LA2730



NJM2058D



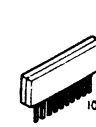
μPC7805HF



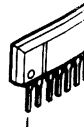
YM3428
μPC1571C



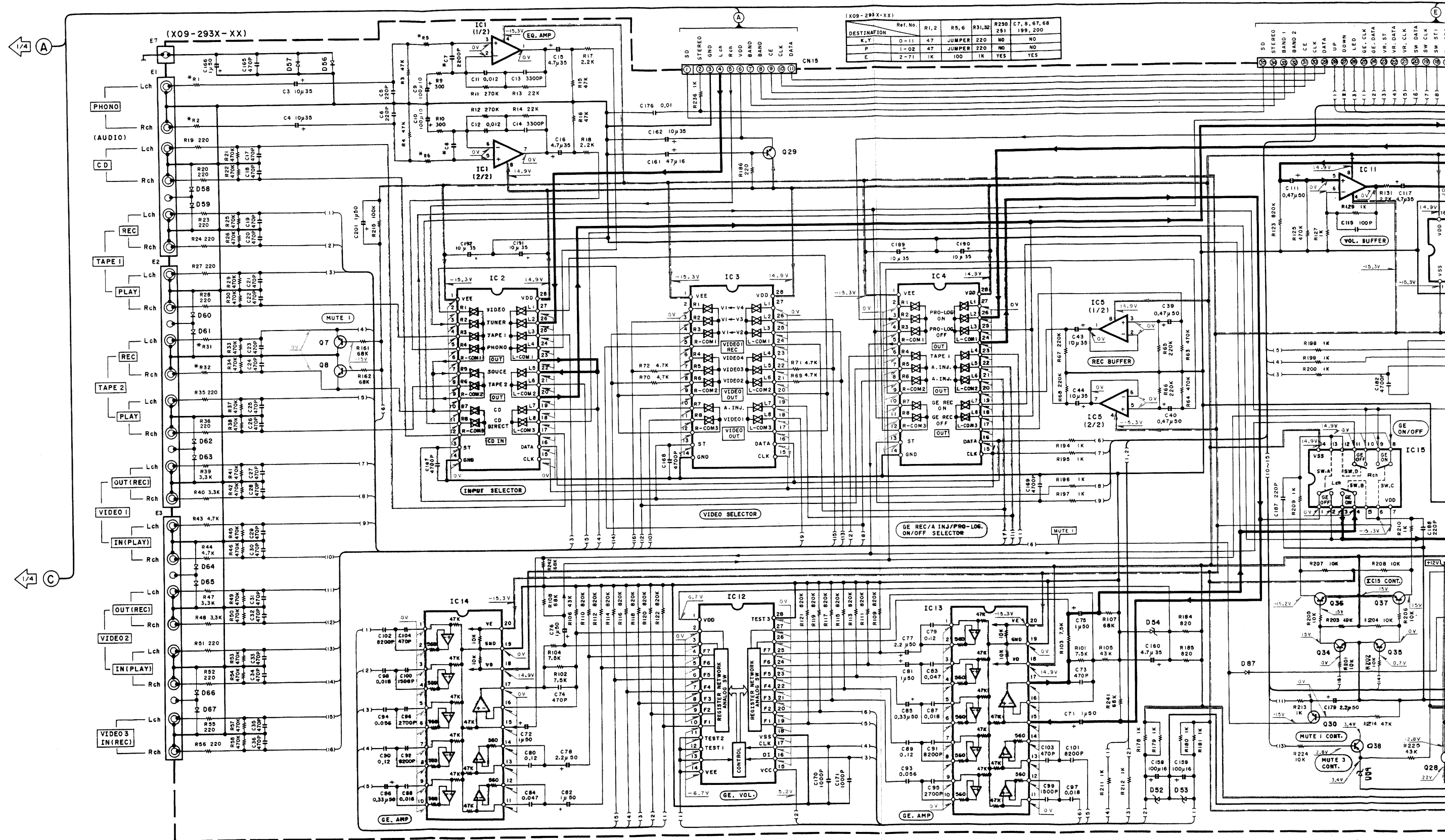
LB1641



NJM07



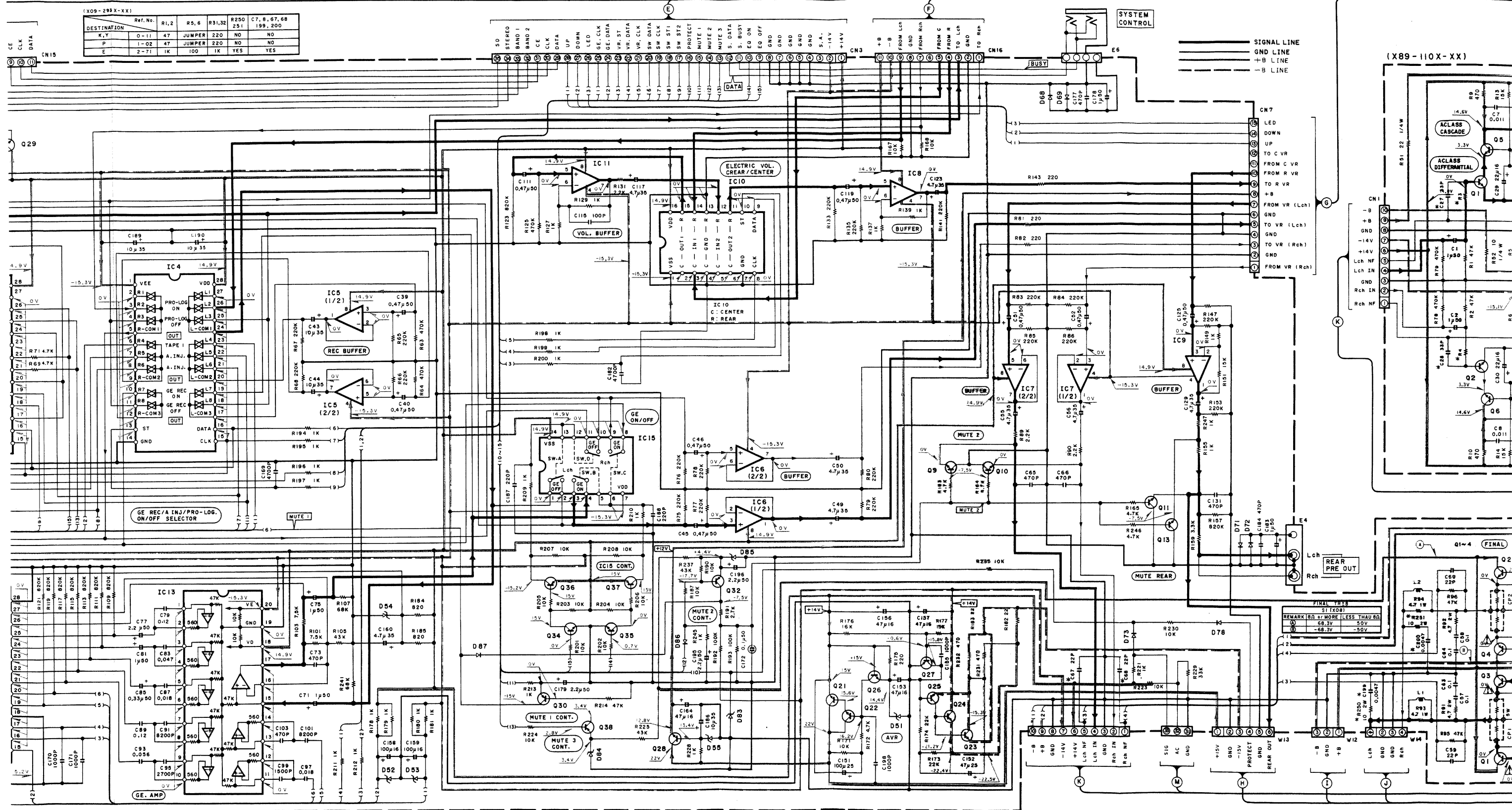




(X09-293X-XX)

Ref. No.	R1,2	R5,6	R31,32	R230	C7, 8, 67, 68
DESTINATION	0-11	47	JUMPER	220	NO
K, Y	1-02	47	JUMPER	220	NO
P	2-71	1K	100	1K	YES

- 2SA733(A)
2SC2003
2SC945(A)
- 2SA933S
2SC1740S
- DTC143TS
- μPD7537ACU-220
- LC7565
- LC7565
- μPD75116CW-024
- CXD1067P



LC7565

LC7565

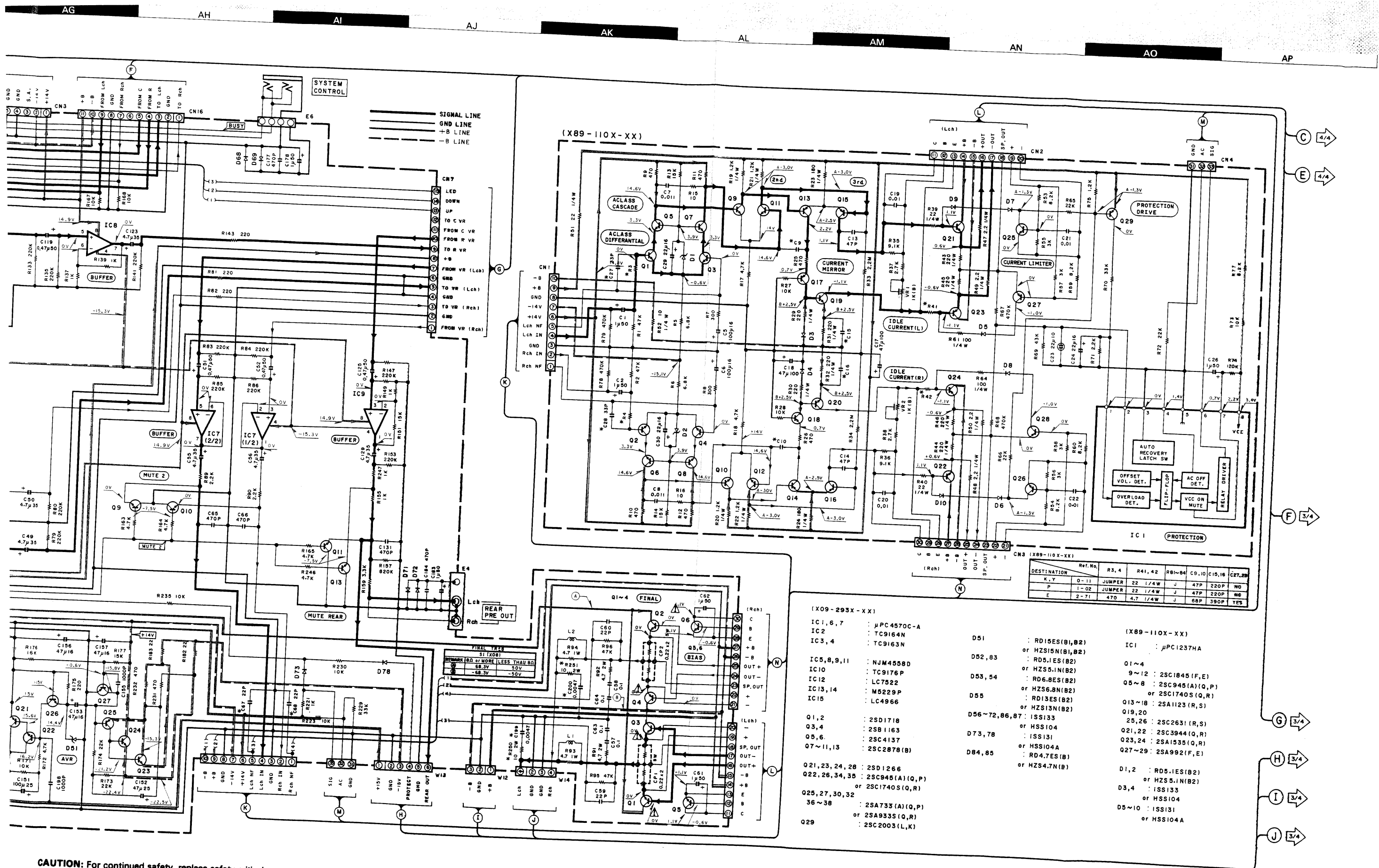
μPD75116CW-02

CXD1067P

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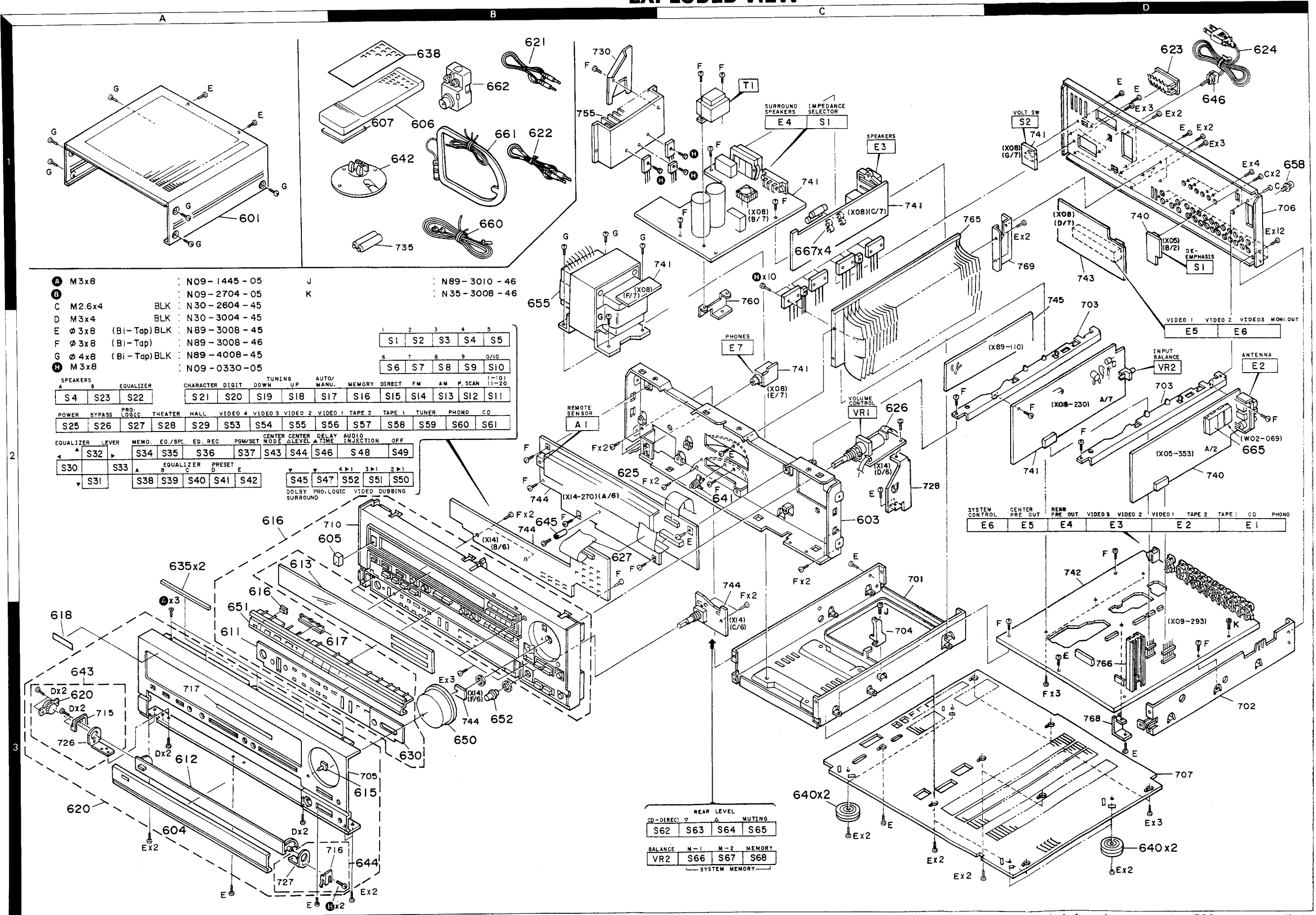
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Y05-2490-11 (2/4)

KR-V8020
KENWOOD

KR-V8020 KR-V8020

EXPLODED VIEW



KR-V8020

KR-V8020

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No.	Address	New Parts	Parts No.	Description	Destination	Remarks
参照番号	位置	新	部品番号	部品名 / 規格	仕向	備考
KR-V8020						
601	1A		A01-1806-01	METALLIC CABINET		
602	3A	*	A20-6029-01	PANEL ASSY		
603	2A, 2B		A22-1093-02	SUB PANEL		
604	3A	*	A29-0168-02	PANEL		
605	2B		A33-0113-04	REFLECTOR		
606	1A, 1B	*	A70-0338-05	REMOTE CONTROLLER ASSY	E	
606	1A, 1B		A70-0342-05	REMOTE CONTROLLER ASSY	KPY	
607	1A, 1B		A09-0086-08	BATTERY COVER (A70-0342-05)	KPY	
607	1A, 1B		A09-0088-08	BATTERY COVER (A70-0338-05)	E	
610	2A, 2B		B01-0437-02	PANEL ESCUTCHEON ASSY		
611	3A, 3B		B03-2560-03	DRESSING PLATE		
612	3A		B07-1884-02	ESCUTCHEON		
613	2B, 3B	*	B10-1086-03	FRONT GLASS		
615	3A		B12-0048-04	INDICATOR		
616	2A		B12-0123-04	INDICATOR		
617	2A, 3A		B12-0124-04	INDICATOR		
618	2A, 3A		B43-0287-04	KENWOOD BADGE		
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0094-03	WARRANTY CARD	Y	
-			B46-0095-03	WARRANTY CARD	Y	
-			B46-0121-03	WARRANTY CARD	P	
-			B46-0122-13	WARRANTY CARD	E	
-			B58-0513-04	CAUTION CARD (PRESET220-240)	Y	
-			B58-0803-13	CAUTION CARD	E	
-		*	B60-0102-00	INSTRUCTION MANUAL (ENGLISH)	KPY	
-		*	B60-0103-00	INSTRUCTION MANUAL (FRENCH)	P	
-		*	B60-0104-00	INSTRUCTION MANUAL (GE, DU)	E	
-		*	B60-0132-00	INSTRUCTION MANUAL (FRENCH)	E	
620	3B		D39-0200-05	DAMPER		
621	1B		E30-0977-05	CORD WITH PLUG	E	
622	1B		E30-1392-05	CORD WITH PLUG	E	
△ 623	1D		E03-0055-05	AC OUTLET	E	
△ 623	1D		E03-0086-05	AC OUTLET	KPY	
△ 624	1D		E30-0459-05	AC POWER CORD	E	
△ 624	1D		E30-0812-05	AC POWER CORD	Y	
△ 624	1D		E30-2209-05	AC POWER CORD	KP	
625	2B, 2C		E31-4457-05	WIRING HARNESS (X09-X14 CN3)		
626	2C, 3D		E31-4990-05	WIRING HARNESS (X09-X14 CN7)		
627	2B		E31-7143-05	WIRING HARNESS (X14-X14 CN1)		
630	3B		F19-1006-04	BLIND PLATE		
635	3A		G11-0191-04	SOFT TAPE (90X5X2.5)		
638	1B		G16-0756-08	WRITING SEET (A70-0342-05)	KPY	
-		*	H01-8799-04	ITEM CARTON CASE		
-			H10-3803-12	POLYSTYRENE FOAMED FIXTURE		
-			H10-3804-02	POLYSTYRENE FOAMED FIXTURE		
-			H11-0028-04	POLYSTYRENE FOAMED BOARD		
-			H12-2061-04	PACKING FIXTURE		
-			H13-0026-04	CARTON BOARD		
-			H25-0225-04	PROTECTION BAG (850X450X0.03)		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)		

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参照番号	位置	新	部品番号	部品名 / 規格	仕向	備考
640	3C, 3D		J02-1034-05	FOOT		
641	2B		J19-0506-05	UNIT HOLDER		
642	1B		J19-2815-04	ANTENNA HOLDER		
643	3A		J21-5495-04	DAMPER ASSY		
644	3A		J21-5539-04	MOUNTING HARDWARE ASSY		
645	2B	*	J39-0152-04	SPACER		
△ 646	1D		J42-0083-05	POWER CORD BUSHING		
-			J61-0307-05	WIRE BAND		
650	3B		K29-3633-04	KNOB ASSY (VOLUME CONTROL)		
651	3A, 3B		K29-3642-04	KNOB (INPUT SELECTOR)		
652	3B		K29-3724-02	KNOB (BALANCE)		
△ 655	1B, 2B		L01-8631-05	POWER TRANSFORMER	K	
△ 655	1B, 2B		L01-8632-05	POWER TRANSFORMER	E	
△ 655	1B, 2B		L01-8635-05	POWER TRANSFORMER	Y	
△ 655	1B, 2B		L01-8637-05	POWER TRANSFORMER	P	
658	1D		N08-0128-35	BINDING POST (EARTH)		
A	2A, 3A		N09-1445-05	SET SCREW (M3X8)		
B	3A		N09-2704-05	TAPTITE SCREW		
C	1D		N30-2604-45	PAN HEAD MACHINE SCREW		
D	3A		N30-3004-45	PAN HEAD MACHINE SCREW		
E	1A, 1D		N89-3008-45	BINDING HEAD TAPTITE SCREW		
F	1C, 2B		N89-3008-46	BINDING HEAD TAPTITE SCREW		
G	1A		N89-4008-45	BINDING HEAD TAPTITE SCREW		
660	1B		T90-0121-05	T TYPE ANTENNA		
661	1B		T90-0174-05	LOOP ANTENNA		
662	1B		T90-0177-05	ANTENNA ADAPTOR		
TUNER UNIT (X05-3530-11: K, P, 0-82: Y, 2-72: E)						
C1 , 2			CK45FF1H103Z	CERAMIC	0.010UF	Z
C3			CC93FCH1H391J	CERAMIC	390PF	J
C4			CE04LW1H010M	ELECTRO	1.0UF	50WV
C5			CE04LW1V100M	ELECTRO	10UF	35WV
C6			CK45FF1H103Z	CERAMIC	0.010UF	Z
C7			CK45FF1H223Z	CERAMIC	0.022UF	Z
C8 , 9			CK45FF1H103Z	CERAMIC	0.010UF	Z
C10			CK45FF1H223Z	CERAMIC	0.022UF	Z
C11 , 12			CK45FF1H103Z	CERAMIC	0.010UF	Z
C13 -15			CE04LW1C470M	ELECTRO	47UF	16WV
C16			CE04LW1H2R2M	ELECTRO	2.2UF	50WV
C17			CE04LW1H3R3M	ELECTRO	3.3UF	50WV
C18			CE04LW1V4R7M	ELECTRO	4.7UF	35WV
C19			CF92FV1H223J	MF	0.022UF	J
C20			CF92FV1H273J	MF	0.027UF	J
C21			CK45FF1H223Z	CERAMIC	0.022UF	Z
C22			CC45FSL1H101J	CERAMIC	100PF	J
C23			CE04LW1HR47M	ELECTRO	0.47UF	50WV
C24			CF92FV1H273J	MF	0.027UF	J
C25			CC45FCH1H220J	CERAMIC	22PF	J
C26			CK45FF1H103Z	CERAMIC	0.010UF	Z
C27			CE04LW1H010M	ELECTRO	1.0UF	50WV
C28			CC45FCH1H220J	CERAMIC	22PF	J
C29 -31			CC45FSL1H101J	CERAMIC	100PF	J
C32			CK45FF1H103Z	CERAMIC	0.010UF	Z
C33 , 34			CF92FV1H682J	MF	6800PF	J

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C35			CC93FCH1H471J	CERAMIC 470PF J	Y	
C36 ,37			CF92FV1H273J	MF 0.027UF J	KP	
C36 ,37			CF92FV1H433J	MF 0.043UF J	Y	
C38 ,39			CF92FV1H153J	MF 0.015UF J		
C40			CE04LW1H3R3M	ELECTRO 3.3UF 50WV		
C41 -43			CE04LW1H2R2M	ELECTRO 2.2UF 50WV		
C44			CK45FB1H471K	CERAMIC 470PF K		
C45			CF92FV1H473J	MF 0.047UF J		
C46			CE04LW1HR47M	ELECTRO 0.47UF 50WV	E	
C47			CE04LW1C470M	ELECTRO 47UF 16WV		
C48			CE04LW1V100M	ELECTRO 10UF 35WV		
C49			CE04LW1C470M	ELECTRO 47UF 16WV		
C50 ,51			CE04LW1C220M	ELECTRO 22UF 16WV	E	
C52 ,53			CC45FSL1H151J	CERAMIC 150PF J	KPY	
C52 ,53			CF92FV1H122J	MF 1200PF J	E	
C54			CC45FSL1H151J	CERAMIC 150PF J	E	
TC1 ,2			C05-0303-05	CERAMIC TRIMMER CAPACITOR(20PF)		
E2			E20-0321-05	LOCK TERMINAL BOARD (ANTENNA)		
CF1 ,2			L72-0531-05	CERAMIC FILTER	KPY	
CF1 ,2			L72-0536-05	CERAMIC FILTER	E	
CF3			L72-0099-05	CERAMIC FILTER		
CF4			L72-0096-05	CERAMIC FILTER		
L1			L40-1091-17	SMALL FIXED INDUCTOR		
L2			L40-1021-14	SMALL FIXED INDUCTOR(1.0MH,K)		
L3			L40-1091-17	SMALL FIXED INDUCTOR		
L4			L30-0484-05	FM IFT		
L5			L30-0485-05	FM IFT	E	
L6			L79-0125-05	LC FILTER		
L7			L79-0739-05	LC FILTER	E	
L8			L31-0509-05	MW-RF COIL		
L9			L32-0277-15	MW OSCILLATING COIL		
L10			L30-0362-05	AM IFT		
X1			L77-1122-05	CRYSTAL RESONATOR (7.2MHz)		
R14			RD14GB2E101J	FL-PROOF RD 100 J 1/4W		
R22 ,23			RD14GB2E101J	FL-PROOF RD 100 J 1/4W		
R24			RD14GB2E221J	FL-PROOF RD 220 J 1/4W		
R45			RD14GB2E101J	FL-PROOF RD 100 J 1/4W	E	
R53			RD14GB2E330J	FL-PROOF RD 33 J 1/4W		
VR1			R12-3130-05	TRIMMING POT.33K		
VR2			R12-3126-05	TRIM POT. 10K		
VR3			R12-1089-05	TRIM POT. 4.7K		
VR4			R12-6016-05	TRIMMING POT.330K	E	
VR4			R12-8015-05	TRIMMING POT.1M	KPY	
S1			S31-2072-05	SLIDE SWITCH (DE-EMPHASIS)	Y	
D1 ,2			1SS133	DIODE		
D1 ,2			1SS176	DIODE		
D3			HZS5.1N(B2)	ZENER DIODE		
D3			RD5.1ES(B2)	ZENER DIODE		
D4 -6			1SS133	DIODE		
D4 -6			1SS176	DIODE		
D7			KV1236(Z2)	VARIABLE CAPACITANCE DIODE		
IC1			LA1265	IC(FM/AM TUNER)		
IC2			LM7001	IC(PLL FREQUENCY SYNTHESIZER)		

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KR-V8020

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IC3 Q1 Q2 Q2 Q3			AN7470 2SC1923(R,0) 2SC1740S(Q,R) 2SC945(A)(Q,P) 2SC1845(F,E)	IC(FM MPX) TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q4 Q4 Q5 ,6 Q5 ,6 Q7 ,8			2SC1740S(Q,R) 2SC945(A)(Q,P) 2SC1740S(Q,R) 2SC945(A)(Q,P) 2SA733(A)(Q,P)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	E E Y Y	
Q7 ,8			2SA933S(Q,R)	TRANSISTOR		
665	2D		W02-0699-05	FM FRONT-END ASSY	KPY	
665	2D		W02-0700-05	FM FRONT-END ASSY	E	
PRE-AMPLIFIER UNIT (X08-2300-11: K, 1-02: P, 0-82: Y, 2-71: E)						
C34 C35 C36 C37 C38			CF92FV1H472J CF92FV1H333J CE04LW1C470M CE04LW1C220M CE04LW1H010M	MF 4700PF J MF 0.033UF J ELECTRO 47UF 16WV ELECTRO 22UF 16WV ELECTRO 1.0UF 50WV		
C39 C40 C41 C42 C43			CF92FV1H104J CF92FV1H334J CE04LW1C101M CF92FV1H273J CF92FV1H682J	MF 0.10UF J MF 0.33UF J ELECTRO 100UF 16WV MF 0.027UF J MF 6800PF J		
C44 C45 C46 C47 C48			CC45FSL1H180J CE04LW1V4R7M CE04LW1H010M C90-1352-05 CC45FSL1H221J	CERAMIC 18PF J ELECTRO 4.7UF 35WV ELECTRO 1.0UF 50WV NP-ELEC 4.7UF 25WV CERAMIC 220PF J		
C49 C50 C51 C52 -54 C55 ,56			CF92FV1H472J CF92FV1H682J CC45FSL1H100D CC45FSL1H101J CE04LW1V100M	MF 4700PF J MF 6800PF J CERAMIC 10PF D CERAMIC 100PF J ELECTRO 10UF 35WV		
C57 C58 C59 ,60 C61 C62			CE04LW1HR22M CE04LW1C470M CE04LW1A101M CE04LW1H010M CE04LW1V100M	ELECTRO 0.22UF 50WV ELECTRO 47UF 16WV ELECTRO 100UF 10WV ELECTRO 1.0UF 50WV ELECTRO 10UF 35WV		
C63 C64 C65 C66 C67			CE04LW1H010M CC45FSL1H101J CE04LW1H010M CE04LW1HR22M CE04LW1C470M	ELECTRO 1.0UF 50WV CERAMIC 100PF J ELECTRO 1.0UF 50WV ELECTRO 0.22UF 50WV ELECTRO 47UF 16WV		
C68 C69 C70 -72 C73 C74			CC93FCH1H152J CE04LW1V4R7M CC45FSL1H101J C90-1352-05 CE04LW1H010M	CERAMIC 1500PF J ELECTRO 4.7UF 35WV CERAMIC 100PF J NP-ELEC 4.7UF 25WV ELECTRO 1.0UF 50WV		
C75 -77 C78 C79 C80 ,81 C82			CC45FSL1H101J CF92FV1H153J CF92FV1H392J CK45FB1H821K CF92FV1H392J	CERAMIC 100PF J MF 0.015UF J MF 3900PF J CERAMIC 820PF K MF 3900PF J		

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C83 C84 ,85 C86 ,87 C94 ,95 C101			CF92FV1H153J CC45FSL1H101J CE04LW1H010M CE04LW1H010M CE04LW0J471M	MF 0.015UF J CERAMIC 100PF J ELECTRO 1.0UF 50WV ELECTRO 1.0UF 50WV ELECTRO 470UF 6.3WV		
C102 C103 C104-106 C107-113 C114			CE04LW1C331M CE04LW0J471M CK45FF1H103Z CE04LW1A101M CE04LW0J471M	ELECTRO 330UF 16WV ELECTRO 470UF 6.3WV CERAMIC 0.010UF Z ELECTRO 100UF 10WV ELECTRO 470UF 6.3WV		
C115 C121 C121 C124-132 C126-129			CE04LW1H010M C91-0023-05 C91-0647-05 CK45FF1H103Z CK45FF1H103Z	ELECTRO 1.0UF 50WV CERAMIC 0.01UF AC250V CERAMIC 0.01UF P CERAMIC 0.010UF Z CERAMIC 0.010UF Z	Y KPE E KPY	
C131,132 C133 C134 C135,136 C137			CK45FF1H103Z CK45FF1H472Z CK45FB1H561K CK45FF1H472Z CK45FB1H561K	CERAMIC 0.010UF Z CERAMIC 4700PF Z CERAMIC 560PF K CERAMIC 4700PF Z CERAMIC 560PF K	KPY E E E E	
C138 C139 C140 C141 C142			CK45FF1H472Z CK45FF1H103Z CK45FB1H561K CK45FF1H103Z CE04LW1H010M	CERAMIC 4700PF Z CERAMIC 0.010UF Z CERAMIC 560PF K CERAMIC 0.010UF Z ELECTRO 1.0UF 50WV	E E E E E	
C143 C144,145 C145 C146 C148			CK45FF1H472Z CC45FSL1H101J CC45FSL1H180J CC45FSL1H820J CE04LW1H470M	CERAMIC 4700PF Z CERAMIC 100PF J CERAMIC 18PF J CERAMIC 82PF J ELECTRO 47UF 50WV	E KPY	
C149 C150 C151 C152 C153			CE04LW1C470M CE04LW1A101M CE04LW1H220M CF92FV1H473J CK45FB1H222K	ELECTRO 47UF 16WV ELECTRO 100UF 10WV ELECTRO 22UF 50WV MF 0.047UF J CERAMIC 2200PF K		
C154 C155 C156,157 C158,159 C160		*	CE04LW1E330M CE04LW2A100M C90-1745-05 C90-1318-05 C90-1745-05	ELECTRO 33UF 25WV ELECTRO 10UF 100WV ELECTRO 3300UF 42WV ELECTRO 7500UF 80WV ELECTRO 3300UF 42WV		
C161 C162 C163 C164 C165			CE04LW1V102M CE04LW1E471M CE04LW1J470M CK45FF1H103Z CE04LW1A101M	ELECTRO 1000UF 35WV ELECTRO 470UF 25WV ELECTRO 47UF 63WV CERAMIC 0.010UF Z ELECTRO 100UF 10WV		
C167 C168		*	CE04LW2A010M CK45FB1H222K	ELECTRO 1.0UF 100WV CERAMIC 2200PF K		
E3 E4 E5 ,6 E7			E20-0823-05 E20-0459-05 E13-0318-05 E11-0162-05	LOCK TERMINAL BOARD(SP FRONT) LOCK TERMINAL BOARD(SP REAR) PHONE JACK(3P)(VIDEO,MONI OUT) HEAD PHONE JACK(3P)		
F1 F1 F1 ,2			F05-3121-05 F05-7026-05 F06-4029-05	FUSE (SEMKO) (250V T3.15A) FUSE (UL) (250V 7A) FUSE (250V 4A)	E KP Y	

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△ F2			F05-2525-05	FUSE (SEMΚ0) (250V T2.5A)	E	
△ F3 ,4			F04-5022-05	FUSE (UL) (125V 5A UL)	KP	
△ F3 ,4			F05-3121-05	FUSE (SEMΚ0) (250V T3.15A)	E	
F5 ,6			F04-2025-05	FUSE (UL) (250V 2A)	P	
△ F5 ,6			F06-2021-05	FUSE (SEMΚ0) (250V T2A)	E	
667	1C		J13-0041-05	FUSE CLIP	KP	
667	1C		J13-0054-05	FUSE CLIP		
L1			L40-2291-17	SMALL FIXED INDUCTOR		
L2			L39-0085-05	PHASE-COMPENSATION COIL		
T1			L01-8911-05	POWER TRANSFORMER	KP	
T1			L01-8912-05	POWER TRANSFORMER	E	
T1			L01-8914-05	POWER TRANSFORMER	Y	
X1			L78-0255-15	RESONATOR		
F	1B, 1C		N89-3008-46	BINDING HEAD TAPTITE SCREW		
H	1B, 1C		N09-0333-05	TAPPING SCREW (3X12)		
J	1C		N89-3010-46	BINDING HEAD TAPTITE SCREW		
CP1			R90-0187-05	MULTI-COMP 0.22X2 K 5W		
R10			RD14GB2E101J	FL-PROOF RD 100 J 1/4W		
R101			RD14GB2E470J	FL-PROOF RD 47 J 1/4W		
R171			R92-0173-05	RC 2.2M M 1/2W	KP	
R183			RD14NB2E101J	RD 100 J 1/4W		
R185, 186			RD14GB2E101J	FL-PROOF RD 100 J 1/4W		
R190, 191			RS14KB3A4R7J	FL-PROOF RS 4.7 J 1W		
R196			RS14KB3A472J	FL-PROOF RS 4.7K J 1W		
R197			RD14NB2E101J	RD 100 J 1/4W		
R202			RD14NB2E101J	RD 100 J 1/4W		
R209			RD14NB2E101J	RD 100 J 1/4W		
R211			RD14NB2E101J	RD 100 J 1/4W		
R213			RD14NB2E101J	RD 100 J 1/4W		
R214, 215			RS14KB3A561J	FL-PROOF RS 560 J 1W		
VR2			R05-5012-05	POTENTIOMETER		
△ K1			S51-1036-05	MAGNETIC RELAY		
K2 -5			S51-2078-05	MAGNETIC RELAY		
S1			S31-2136-05	SLIDE SWITCH (IMPEDANCE SELECT)		
△ S2			S31-3010-05	SLIDE SWITCH (VOLTAGE SELECT)	Y	
D1 -5			HSS104	DIODE		
D1 -5			1SS133	DIODE		
D9			HSS104	DIODE		
D9			1SS133	DIODE		
D11			HSS104	DIODE		
D11			1SS133	DIODE		
D13			HSS104	DIODE		
D13			1SS133	DIODE		
D41 -49			S5566B	DIODE		
D50 ,51			HSS104A	DIODE		
D50 ,51			1SS131	DIODE		
D52			S5566B	DIODE		
D53			HSS104A	DIODE		
D53			1SS131	DIODE		
D54			HZS6.8N(B2)	ZENER DIODE		
D54			RD6.8ES(B2)	ZENER DIODE		
D55 ,56			HZS18N(B)	ZENER DIODE		
D55 ,56			RD18ES(B)	ZENER DIODE		

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D57			HZS13N(B2)	ZENER DIODE		
D57			RD13ES(B2)	ZENER DIODE		
D58			HSS104A	DIODE		
D58			1SS131	DIODE		
D59 ,60			S5566B	DIODE		
D61			HZS5.1N(B2)	ZENER DIODE		
D61			RD5.1ES(B2)	ZENER DIODE		
D62			S5566B	DIODE		
D63			D3SBA20F03	DIODE		
D63			RBV-402LFA	DIODE		
D64			D5FB20*1	DIODE		
D65 -71			S5566B	DIODE		
D72 ,73			HSS104	DIODE		
D72 ,73			1SS133	DIODE		
IC1			NJM2058D	IC(OP AMP X4)		
IC4			TC9162M	IC(ANALOG SWITCH ARRAY)		
IC5			NJM4565L	IC		
IC6			UPC1571C	IC(NOISE SUPPRESSOR)		
IC7			NJM78L05A	IC(VOLTAGE REGULATOR/ +5V)		
IC8			YM3428	IC		
IC9			LA2730	IC(DOLBY SYSTEM)		
IC10			NJM072BL	IC(OP AMP)		
IC11			NJM4565L	IC		
IC13-15			NJM2246L	IC(VIDEO SW)		
IC16			UPC7805HF	IC(VOLTAGE REGULATOR/ +5V)		
Q6 -8			2SA999(E,F)	TRANSISTOR		
Q21			2SD1302(S,T)	TRANSISTOR		
Q22			2SC1740S(Q,R)	TRANSISTOR		
Q22			2SC945(A)(Q,P)	TRANSISTOR		
Q23			2SA733(A)(Q,P)	TRANSISTOR		
Q23			2SA933S(Q,R)	TRANSISTOR		
Q24			2SB772(Q,P)	TRANSISTOR		
Q25 -27			2SA992(F,E)	TRANSISTOR		
Q28			2SC1845(F,E)	TRANSISTOR		
Q29			2SC4137	TRANSISTOR		
Q30			2SD1893*5	TRANSISTOR		
Q31			2SB1253*5	TRANSISTOR		
Q32			2SC1845(F,E)	TRANSISTOR		
Q33			2SA733(A)(Q,P)	TRANSISTOR		
Q33			2SA933S(Q,R)	TRANSISTOR		
Q34 -37			2SC1740S(Q,R)	TRANSISTOR		
Q34 -37			2SC945(A)(Q,P)	TRANSISTOR		
AUDIO UNIT (X09-2930-11: K, Y, 1-02: P, 2-71: E)						
C3 ,4			CE04LW1V100M	ELECTRO 10UF 35WV		
C5 ,6			CC45FSL1H221J	CERAMIC 220PF J		
C7 ,8			CK45FB1H222K	CERAMIC 2200PF K		
C9 ,10			CE04LW1A101M	ELECTRO 100UF 10WV		
C11 ,12			CF92FV1H123J	MF 0.012UF J		
C13 ,14			CF92FV1H332J	MF 3300PF J		
C15 ,16			CE04LW1V4R7M	ELECTRO 4.7UF 35WV		
C17 -36			CK45FB1H471K	CERAMIC 470PF K		
C39 ,40			CE04LW1HR47M	ELECTRO 0.47UF 50WV		
C43 ,44			CE04LW1V100M	ELECTRO 10UF 35WV		
C45 ,46			CE04LW1HR47M	ELECTRO 0.47UF 50WV		

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C49 ,50			CE04LW1V4R7M	ELECTRO 4.7UF 35WV		
C51 ,52			CE04LW1HR47M	ELECTRO 0.47UF 50WV		
C55 ,56			CE04LW1V4R7M	ELECTRO 4.7UF 35WV		
C57 ,58			CF92FV1H104J	MF 0.10UF J		
C59 ,60			CC45FSL1H220J	CERAMIC 22PF J		
C61 ,62			CE04LW1H010M	ELECTRO 1.0UF 50WV		
C63 ,64			CF92FV1H104J	MF 0.10UF J		
C65 ,66			CK45FB1H471K	CERAMIC 470PF K		
C67 ,68			CC45FSL1H220J	CERAMIC 22PF J		
C71 ,72			CE04LW1H010M	ELECTRO 1.0UF 50WV		
C73 ,74			CK45FB1H471K	CERAMIC 470PF K		
C75 ,76			CE04LW1H010M	ELECTRO 1.0UF 50WV		
C77 ,78			CE04LW1H2R2M	ELECTRO 2.2UF 50WV		
C79 ,80			CF92FV1H124J	MF 0.12UF J		
C81 ,82			CE04LW1H010M	ELECTRO 1.0UF 50WV		
C83 ,84			C91-0692-05	CERAMIC 0.047UF K		
C85 ,86			CE04LW1HR33M	ELECTRO 0.33UF 50WV		
C87 ,88			C91-0682-05	CERAMIC 0.018UF K		
C89 ,90			CF92FV1H124J	MF 0.12UF J		
C91 ,92			C91-0674-05	CERAMIC 0.0082UF K		
C93 ,94			C91-0694-05	CERAMIC 0.056UF K		
C95 ,96			C91-0662-05	CERAMIC 0.0027UF K		
C97 ,98			C91-0682-05	CERAMIC 0.018UF K		
C99 ,100			C91-0656-05	CERAMIC 0.0015UF K		
C101,102			C91-0674-05	CERAMIC 0.0082UF K		
C103,104			CK45FB1H471K	CERAMIC 470PF K		
C111			CE04LW1HR47M	ELECTRO 0.47UF 50WV		
C115			CC45FSL1H101J	CERAMIC 100PF J		
C117			CE04LW1V4R7M	ELECTRO 4.7UF 35WV		
C119			CE04LW1HR47M	ELECTRO 0.47UF 50WV		
C123			CE04LW1V4R7M	ELECTRO 4.7UF 35WV		
C125			CE04LW1HR47M	ELECTRO 0.47UF 50WV		
C129			CE04LW1V4R7M	ELECTRO 4.7UF 35WV		
C131			CK45FB1H471K	CERAMIC 470PF K		
C151			CE04LW1E101M	ELECTRO 100UF 25WV		
C152			CE04LW1E470M	ELECTRO 47UF 25WV		
C153			CE04LW1C470M	ELECTRO 47UF 16WV		
C155			CK45FB1H102K	CERAMIC 1000PF K		
C156,157			CE04LW1C470M	ELECTRO 47UF 16WV		
C158,159			CE04LW1C101M	ELECTRO 100UF 16WV		
C160			CE04LW1V4R7M	ELECTRO 4.7UF 35WV		
C161			CE04LW1C470M	ELECTRO 47UF 16WV		
C162			CE04LW1V100M	ELECTRO 10UF 35WV		
C164			CE04LW1C470M	ELECTRO 47UF 16WV		
C165			CK45FB1H471K	CERAMIC 470PF K		
C166			CE04LW1H010M	ELECTRO 1.0UF 50WV		
C167-169			CK45FF1H472Z	CERAMIC 4700PF Z		
C170,171			CK45FB1H102K	CERAMIC 1000PF K		
C172			C90-1455-05	NP-ELEC 0.1UF 50WV		
C176			CK45FF1H103Z	CERAMIC 0.010UF Z		
C177			CK45FB1H471K	CERAMIC 470PF K		
C178			CE04LW1H010M	ELECTRO 1.0UF 50WV		
C179			CE04LW1H2R2M	ELECTRO 2.2UF 50WV		
C182			CK45FF1H472Z	CERAMIC 4700PF Z		
C183			CE04LW1H010M	ELECTRO 1.0UF 50WV		

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C184 C186 C187,188 C189-192 C195,196			CK45FB1H471K CE04LW1V100M CC45FSL1H221J CE04LW1V100M CE04LW1H2R2M	CERAMIC 470PF K ELECTRO 10UF 35WV CERAMIC 220PF J ELECTRO 10UF 35WV ELECTRO 2.2UF 50WV		
C198 C199,200 C201			CK45FB1H102K CF92FV1H472J CE04LW1H010M	CERAMIC 1000PF K MF 4700PF J ELECTRO 1.0UF 50WV	E	
CN10 E1 E2 ,3 E4 E6			E10-0408-05 E13-0634-05 E13-0820-05 E13-0235-05 E11-0188-05	FLAT CABLE CONNECTOR PHONE JACK (6P)(PHONE,CD,TAPE) PHONE JACK (8P)(TAPE,VIDEO) PHONE JACK (2P)(REAR OUT) PHONE JACK (SYSTEM CONTROL)		
L1 ,2			L39-0085-05	PHASE-COMPENSATION COIL		
E F H K	3D 2D,3D 1C 1C		N89-3008-45 N89-3008-46 N09-0333-05 N35-3008-46	BINDING HEAD TAPTITE SCREW BINDING HEAD TAPTITE SCREW TAPPING SCREW (3X12) BINDING HEAD MACHINE SCREW		
CP1 ,2 R91 ,92 R93 ,94 R182,183 R231,232			R90-0187-05 RS14KB3D4R7J RS14KB3A4R7J RD14AB2E220J RD14AB2E471J	MULTI-COMP 0.22X2 K 5W FL-PROOF RS 4.7 J 2W FL-PROOF RS 4.7 J 1W FL-PROOF RD 22 J 1/4W FL-PROOF RD 470 J 1/4W		
R250,251			RS14KB3D100J	FL-PROOF RS 10 J 2W	E	
D51 D51 D51 D51 D52			HZS15N(B1) HZS15N(B2) RD15ES(B1) RD15ES(B2) HZS5.1N(B2)	ZENER DIODE ZENER DIODE ZENER DIODE ZENER DIODE ZENER DIODE		
D52 D53 ,54 D53 ,54 D55 D55			RD5.1ES(B2) HZS6.8N(B2) RD6.8ES(B2) HZS13N(B2) RD13ES(B2)	ZENER DIODE ZENER DIODE ZENER DIODE ZENER DIODE ZENER DIODE		
D56 -69 D56 -69 D71 ,72 D71 ,72 D73			HSS104 1SS133 HSS104 1SS133 HSS104A	DIODE DIODE DIODE DIODE DIODE		
D73 D78 D78 D83 D83			1SS131 HSS104A 1SS131 HZS5.1N(B2) RD5.1ES(B2)	DIODE DIODE DIODE ZENER DIODE ZENER DIODE		
D84 ,85 D84 ,85 D86 ,87 D86 ,87 IC1			HZS4.7N(B) RD4.7ES(B) HSS104 1SS133 UPC4570C-A	ZENER DIODE ZENER DIODE DIODE DIODE IC		
IC2 IC3 ,4 IC5 IC6 ,7			TC9164N TC9163N NJM4558D UPC4570C-A	IC(16CH BILATERAL SELECTOR SW) IC(BILATERAL SWITCH X16) IC(OP AMP X2) IC		

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IC8 ,9 IC10 IC11 IC12 IC13,14			NJM4558D TC9176P NJM4558D LC7522 M5229P	IC(OP AMP X2) IC(2CH ELECTRONIC VOLUME) IC(OP AMP X2) IC(7CH GRAPHIC EQUALIZER) IC(7CH GRAPHIC EQUALIZER)		
IC15 Q1 ,2 Q3 ,4 Q5 ,6 Q7 -11			LC4966 2SD1718*5 2SB1163*5 2SC4137 2SC2878(B)	IC(CMOS LOGIC BILATERAL SW) TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q13 Q21 Q22 Q22 Q23 ,24			2SC2878(B) 2SD1266 2SC1740S(Q,R) 2SC945(A)(Q,P) 2SD1266	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q25 Q25 Q26 Q26 Q27			2SA733(A)(Q,P) 2SA933S(Q,R) 2SC1740S(Q,R) 2SC945(A)(Q,P) 2SA733(A)(Q,P)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q27 Q28 Q29 Q30 Q30			2SA933S(Q,R) 2SD1266 2SC2003(L,K) 2SA733(A)(Q,P) 2SA933S(Q,R)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q32 Q32 Q34 ,35 Q34 ,35 Q36 -38			2SA733(A)(Q,P) 2SA933S(Q,R) 2SC1740S(Q,R) 2SC945(A)(Q,P) 2SA733(A)(Q,P)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q36 -38			2SA933S(Q,R)	TRANSISTOR		
DISPLAY UNIT (X14-2700-12: K, P, Y, 2-71: E)						
D56 -59 D60 ,61			B30-1012-05 B30-0431-05	LED(SLP-981C-50) LED(LN21CPH)		
C1 C2 C3 C4 ,5 C6		*	C90-1826-05 CE04LW1A101M CE04LW1H010M CC45FSL1H101J CE04LW1C101M	BACKUP 0.047F 5.5WV ELECTRO 100UF 10WV ELECTRO 1.0UF 50WV CERAMIC 100PF J ELECTRO 100UF 16WV		
C7 C8 ,9 C10 C11 C12			CE04LW1A101M CC45FSL1H101J CK45FB1H102K CE04LW1C101M CE04LW1A101M	ELECTRO 100UF 10WV CERAMIC 100PF J CERAMIC 1000PF K ELECTRO 100UF 16WV ELECTRO 100UF 10WV		
C14 -17 C18 C19 ,20 C23 C46			CC45FSL1H101J CK45FB1H102K CE04LW1A101M CE04LW1A101M CK45FF1H223Z	CERAMIC 100PF J CERAMIC 1000PF K ELECTRO 100UF 10WV ELECTRO 100UF 10WV CERAMIC 0.022UF Z		
C47 ,48 C49 C50 ,51 C52 C54			CF92FV1H104J C90-1333-05 CK45FB1H102K CE04LW1C101M CK45FF1H223Z	MF 0.10UF J NP-ELEC 22UF 10WV CERAMIC 1000PF K ELECTRO 100UF 16WV CERAMIC 0.022UF Z		

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C55 ,56 C57 ,58			CE04LW1H010M CK45FF1H103Z	ELECTRO 1.0UF 50WV CERAMIC 0.010UF Z		
CN8			E10-0509-05	FLAT CABLE CONNECTOR		
X1 X2 ,3			L78-0209-05 L78-0239-05	RESONATOR (4.194MHZ) RESONATOR		
CP1 CP2 CP3 CP4 CP5			R90-0844-05 R90-0849-05 R90-0841-05 R90-0483-05 R90-0837-05	MULTI-COMP 1000PX2 MULTI-COMP 1KX5 J 1/6W MULTI-COMP 510KX8 J 1/6W MULTI-COMP 100KX13 J 1/6W COMPOSITE ELEMENTS		
CP6 CP7 CP8 CP9 CP10			R90-0802-05 R90-0845-05 R90-0810-05 R90-0842-05 R90-0482-05	MULTI-COMP 100KX10 J 1/4W MULTI-COMP 1000PX2 +0 .01 MULTIPLE RESISTOR MULTI-COMP 1000PX4 MULTI-COMP 100KX4 J 1/6W		
CP11 CP12 CP13 CP14 CP15			R90-0843-05 R90-0810-05 R90-0842-05 R90-0482-05 R90-0843-05	MULTI-COMP 1000PX3 MULTIPLE RESISTOR MULTI-COMP 1000PX4 MULTI-COMP 100KX4 J 1/6W MULTI-COMP 1000PX3		
CP16 CP17 CP22 CP23 R118			R90-0483-05 R90-0493-05 R90-0838-05 R90-0492-05 RD14AB2E100J	MULTI-COMP 100KX13 J 1/6W MULTI-COMP 100KX9 J 1/6W COMPOSITE ELEMENTS MULTI-COMP 100KX8 J 1/6W FL-PROOF RD 10 J 1/4W		
R124 VR1 VR2			RD14AB2E3R9J R29-5027-05 R10-5032-05	FL-PROOF RD 3.9 J 1/4W POTENTIOMETER (VOLUME CONTROL) POTENTIOMETER (BALANCE)		
S1 -34 S36 -42 S46 -51 S53 -61 S63 -68			S40-1064-05 S40-1064-05 S40-1064-05 S40-1064-05 S40-1064-05	PUSH SWITCH PUSH SWITCH PUSH SWITCH PUSH SWITCH PUSH SWITCH		
D1 -10 D1 -10 D13 D13 D17			HSS104 1SS133 HSS104 1SS133 HSS104	DIODE DIODE DIODE DIODE DIODE	KPY KPYP KPYP	
D17 D19 -23 D19 -23 D20 -23 D20 -23			1SS133 HSS104 1SS133 HSS104 1SS133	DIODE DIODE DIODE DIODE DIODE	KPY E E KPYP KPYP	
D24 D24 D25 -30 D25 -30 D40 -55			HZS10N(B2) RD10ES(B2) HSS104 1SS133 HSS104	ZENER DIODE ZENER DIODE DIODE DIODE DIODE		
D40 -55 D63 -67 D63 -67 D68 D68			1SS133 HSS104 1SS133 HZS5.1N(B2) RD5.1ES(B2)	DIODE DIODE DIODE ZENER DIODE ZENER DIODE		

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D74			HSS104	DIODE		
D74			1SS133	DIODE		
D77 -79			HSS104	DIODE		
D77 -79			1SS133	DIODE		
D82			HSS104	DIODE		
D82			1SS133	DIODE		
FL1			BG-652GK	FLUORESCENT INDICATOR TUBE		
IC1			UPD75116CW-108	IC(MICROPROCESSOR)		
IC2 ,3			UPD7537ACU-220	IC(MICROPROCESSOR)		
IC4			LC7565	IC(GRAPHIC EQ FL DISPLAY DR)		
IC5 ,6			CXD1067P	IC(SERIAL-PARALLEL CONVERTER)		
IC7			LB1641	IC(MOTOR DRIVER)		
Q1 -6			2SC1740S(Q,R)	TRANSISTOR		
Q1 -6			2SC945(A)(Q,P)	TRANSISTOR		
Q7			2SA733(A)(Q,P)	TRANSISTOR		
Q7			2SA933S(Q,R)	TRANSISTOR		
Q8			2SA733(A)(Q,P)	TRANSISTOR		
Q8			2SA933S(Q,R)	TRANSISTOR		
Q9			2SA733(A)(Q,P)	TRANSISTOR		
Q9			2SA933S(Q,R)	TRANSISTOR		
Q10			2SA733(A)(Q,P)	TRANSISTOR		
Q10			2SA933S(Q,R)	TRANSISTOR		
Q11			2SA733(A)(Q,P)	TRANSISTOR		
Q11			2SA933S(Q,R)	TRANSISTOR		
Q12			2SC1740S(Q,R)	TRANSISTOR		
Q12			2SC945(A)(Q,P)	TRANSISTOR		
Q13			DTC143TS	DIGITAL TRANSISTOR		
Q14			2SC2003(L,K)	TRANSISTOR		
A1			W02-0975-05	ELECTRIC CIRCUIT MODULE		
MAIN AMPLIFIER UNIT (X89-1100-10)						
C1 ,2			CE04LW1H010M	ELECTRO 1.0UF 50WV		
C5 ,6			CE04LW1C101M	ELECTRO 100UF 16WV		
C7 ,8			CF92FV1H113J	MF 0.011UF J		
C9 ,10			CC45FSL1H470J	CERAMIC 47PF J	KPY	
C9 ,10			CC45FSL1H680J	CERAMIC 68PF J	E	
C13 ,14			CC45FSL1H470J	CERAMIC 47PF J		
C15 ,16			CC45FSL1H221J	CERAMIC 220PF J	KPY	
C15 ,16			CK45FB1H391K	CERAMIC 390PF K	E	
C17 ,18			CE04LW2A470M	ELECTRO 47UF 100WV		
C19 -22			CK45FF1H103Z	CERAMIC 0.010UF Z		
C23			C90-1333-05	NP-ELEC 22UF 10WV		
C24			CE04LW1C220M	ELECTRO 22UF 16WV		
C26			CE04LW1H010M	ELECTRO 1.0UF 50WV		
C27 ,28			CC45FSL1H330J	CERAMIC 33PF J	E	
C29 ,30			CE04LW1C220M	ELECTRO 22UF 16WV		
R19			RD14GB2E122J	FL-PROOF RD 1.2K J 1/4W	KYE	
R19 -22			RD14GB2E122J	FL-PROOF RD 1.2K J 1/4W	P	
R20 -22			RD14AB2E122J	FL-PROOF RD 1.2K J 1/4W	KYE	
R23			RD14GB2E181J	FL-PROOF RD 180 J 1/4W	KYE	
R23 ,24			RD14GB2E181J	FL-PROOF RD 180 J 1/4W	P	
R24			RD14AB2E181J	FL-PROOF RD 180 J 1/4W	KYE	
R29 -32			RD14AB2E221J	FL-PROOF RD 220 J 1/4W	KYE	
R29 -32			RD14GB2E221J	FL-PROOF RD 220 J 1/4W	P	
R39 -42			RD14AB2E220J	FL-PROOF RD 22 J 1/4W	KY	

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R39 -42			RD14GB2E220J	FL-PROOF RD 22 J 1/4W	P	
R39 ,40			RD14AB2E220J	FL-PROOF RD 22 J 1/4W	E	
R41 ,42			RD14AB2E4R7J	FL-PROOF RD 4.7 J 1/4W	E	
R43 -46			RD14AB2E221J	FL-PROOF RD 220 J 1/4W	KYE	
R43 -46			RD14GB2E221J	FL-PROOF RD 220 J 1/4W	P	
R47 -50			RD14AB2E2R2J	FL-PROOF RD 2.2 J 1/4W	KYE	
R47 -50			RD14GB2E2R2J	FL-PROOF RD 2.2 J 1/4W	P	
R51			RD14GB2E220J	FL-PROOF RD 22 J 1/4W		
R52			RD14GB2E100J	FL-PROOF RD 10 J 1/4W		
R61			RD14AB2E101J	FL-PROOF RD 100 J 1/4W	KYE	
R61			RD14GB2E101J	FL-PROOF RD 100 J 1/4W	P	
R64			RD14AB2E101J	FL-PROOF RD 100 J 1/4W	KYE	
R64			RD14GB2E101J	FL-PROOF RD 100 J 1/4W	P	
VR1 ,2			R12-1070-05	TRIM POT. 1K		
D1 ,2			HZS5.1N(B2)	ZENER DIODE		
D1 ,2			RD5.1ES(B2)	ZENER DIODE		
D3 ,4			HSS104	DIODE		
D3 ,4			1SS133	DIODE		
D5 -8			HSS104A	DIODE		
D5 -8			1SS131	DIODE		
D9 ,10			HSS104A	DIODE		
D9 ,10			1SS131	DIODE		
IC1			UPC1237HA	IC(POWER AMP)		
Q1 -4			2SC1845(F,E)	TRANSISTOR		
Q5 -8			2SC1740S(Q,R)	TRANSISTOR		
Q5 -8			2SC945(A)(Q,P)	TRANSISTOR		
Q9 -12			2SC1845(F,E)	TRANSISTOR		
Q13 -18			2SA1123(R,S)	TRANSISTOR		
Q19 ,20			2SC2631(R,S)	TRANSISTOR		
Q21 ,22			2SC3944(Q,R)	TRANSISTOR		
Q23 ,24			2SA1535(Q,R)	TRANSISTOR		
Q25 ,26			2SC2631(R,S)	TRANSISTOR		
Q27 -29			2SA992(F,E)	TRANSISTOR		

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SPECIFICATIONS

AUDIO SECTION

Rated Power Output (Except for Europe)

(Front)

100 watts per channel minimum RMS, both channels driven at 8 ohms, from 20 Hz to 20,000 Hz with no more than 0.008% total harmonic distortion. (FTC)

(Rear)

20 watts per channel minimum RMS, both channels driven at 8 ohms at 1 kHz with no more than 0.9% total harmonic distortion.

Maximum continuous output power (For Europe)

(IEC) from 63 Hz to 12,500 Hz

0.7% T.H.D. at 8 ohms 110 W + 110 W

(DIN) 1,000 Hz at 4 ohms 100 W + 100 W

Total Harmonic Distortion

(1 kHz, 8 ohms) 0.003%

Input Sensitivity/Impedance

PHONO (MM) 2.5 mV/47 kohms

CD, TAPE 200 mV/47 kohms

VIDEO 250 mV/47 kohms

Frequency Response

CD, TAPE, VIDEO 10 Hz - 100 kHz +0 dB
-3 dB

Signal-to-Noise Ratio (IHF-A)

PHONO (MM) 79 dB

CD, TAPE 100 dB

VIDEO 90 dB

Graphic Equalizer

Center Frequencies 60 Hz, 150 Hz, 400 Hz, 1 kHz,
2.4 kHz, 6 kHz, 15 kHzControl Range ± 12 dB

VIDEO SECTION

VIDEO Inputs/Outputs 1 Vp-p, 75 ohms unbalanced

FM TUNER SECTION

Tuning Frequency Range 87.5 MHz - 108 MHz

Antenna Impedance 75 ohms unbalanced

Sensitivity IHF 10.8 dBf (0.95 μ V at 75 ohms)DIN (MONO) 1.1 μ V(STEREO) 40 μ V

Signal-to-Noise Ratio at 65 dBf (IHF)

MONO 80 dB

STEREO 74 dB

Total Harmonic Distortion at 1,000 Hz

MONO 0.1%

STEREO 0.2%

Frequency Response 30 Hz - 15 kHz +0.5 dB
-2.0 dBStereo Separation (IHF) 50 dB at 1 kHz
(DIN) 40 dB at 1 kHzSelectivity (± 400 kHz) 53 dB

AM TUNER SECTION

Tuning Frequency Range

530 kHz - 1,610 kHz

(with the AM tuning interval set at 10 kHz)

531 kHz - 1,602 kHz

(with the AM tuning interval set at 9 kHz)

Usable Sensitivity 10 μ V/(400 μ V/m)

Signal-to-Noise Ratio 50 dB

Total Harmonic Distortion 0.3%

Selectivity 25 dB

GENERAL

Power Consumption 4.5A

...USA and Canada Models/450 W.. Others

Dimensions 440 (W) \times 162 (H) \times 420 (D) mm
(17-5/16" \times 6-3/8" \times 16-9/16")

Weight (Net) 12.5 kg (27.6 lb)

Note:

KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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